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AMERICAN

VETERINARY REVIEW

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AMERICAN VETERINARY REVIEW,

APRIL, 1892.

EDITORIAL.

ACTINOMYCOSIS.—In anticipation of our expected inability to be present at the great Peoria trial, and anxious to lay before our readers an accurate report of the proceedings, with the views and opinions of the professional witnesses, and the legal ending of the case, one of our co-editors was commissioned to prepare a general brief of the proceedings for publication in the REVIEW. Dr. Williams accepted the task, and subsequently furnished us the article which appeared in our January issue. We have since then received from another of our colleagues on the editorial staff, Dr. Schwarzkopf, who was one of the witnesses in the case, a criticism upon the editorial of Dr. Williams, and a long article on the subject of actinomycosis besides, which will be found in another part of the present number; and we here append the critique of Dr. S , thus laying both sides of the story before our readers. In the article on actinomycosis the author expresses, perhaps a little too confidently, the hope of a change in our views from those which were propounded in our letter to the Live-Stock Commissioner, but on this point we can only say that while our examination of recent authorities on the subject may have somewhat modified our estimate of the force of certain objections which we have conceived to be valid, we are not yet firmly convinced, and must wait for more weighty evidence of the fallacy of our impressions before abandoning the position which we have heretofore maintained. The first communication of Dr. Schwarzkopf is in the following terms:

THE OTHER SIDE OF THE STORY.

"*Audiatur et altera pars*" is an ancient Roman judicial principle. The truth of this was never more apparent to me than when I read the report of the Peoria trial on actinomycosis, as given by Dr. W. L. Williams. It is a masterpiece of misconception. While the expert witnesses of the plaintiff are pictured very much like fools, those of the defendants seemingly overflow with wisdom. But neither is correct, for certainly both sides have given valuable testimony on scientific points.

Elsewhere in this volume will be found a synopsis of my views on the question of actinomycosis, which relieves me here of a reply on that part. But I cannot refrain, in consequence of Dr. Williams' remarks, to give my impression of the representatives of the Illinois Live-Stock Commission—the bearing of some of them in court while I was there was decidedly objectionable and ungentlemanly. The Secretary of the Board would constantly sneeze and laugh while I was on the stand; it was all fun with him; he ostensibly knew all about actinomycosis. The ill-feeling that was shown to men testifying on the other side of Board was notoriously offensive. They took the trial as a question of life and death with them, and not as a matter of scientific dispute. If such be the *personnel* with which our State veterinarians are surrounded in their daily business, great reforms will be needed to free our colleagues from the ban of such injurious political appendices.

The violent attack of Dr. Williams upon Dr. Hickmann I leave the latter to take care of. However, should he not reply, I shall in a later issue of the Review take a stand against some of Dr. Williams' erroneous utterances in regard to the effect which a moderate view of actinomycosis, as held by Dr. Hickmann, might have on international meat inspection.

Olof Schwarzkopf.

Anti-Rabies Inoculations.—In the editorial department of our March number we gave expression to our views upon the prophylaxy of many contagious diseases of animals by this form of treatment, referring, as the ground of our argument, to the results which had been obtained, or were claimed by various experimenters. Among them, we alluded to those which had been made by Dr. Billings, in the prophylaxy of hog cholera. A reference to our remarks on that occasion will remind our readers that we neither affirmed nor endorsed the results stated by the doctor, but characterized them, in the language of the author himself, as simply "claims."

We have received from the worthy Chief of the Bureau of Animal Industry, Dr. E. Salmon, a communication in relation to the alleged success of Dr. Billings, with a request to find a place for it in the Review. Our columns are always open to contributors upon any subject of interest to veterinarians, and our friend Dr. Salmon knows very well that nothing would give us more pleasure than to receive more frequent communications from his brilliant staff, for the edification of the readers of the REVIEW. But in the present case we regret that we cannot comply with his request for the only reason that having declined to print a portion of the articles offered to us by Dr. Billings, on the affirmative side of the controversy, it would hardly comport with the spirit of fair play to admit the argument of the negative side of the contention, or aid one side to speak while condemning the other to silence.

What reason can there be for any other course on our part? We are far from being influenced by any feeling of disrespect for either party ; both are hard-working veterinarians, and though they differ on the subject in question, as in others, we feel persuaded that neither has pursued the course that would be the best and wisest in the premises. In the publications of both we find statements based on reports of gentlemen who do not seem to us to be sufficiently qualified to conduct the necessary tests, for we believe that the only possible way for the settlement of the questions in contention, and which will put them at rest upon positively professional grounds, is to have the necessary experiments made, watched, recorded and thoroughly authenticated and consummated by veterinarians alone. This, we believe, is the mode of procedure which was put in practice to decide professionally upon the means of prophylaxy suggested for other contagious diseases, and why should there be a deviation from this course in the present case ?

The United States Veterinary Medical Association has funds lying unused in its treasury, and we respectfully suggest the appointment of a committee to institute and supervise the experiments which may be necessary on a certain number of hogs, and to report the result fully and finally. Can the Association make a better use of its unprofitable accumulating capital ? Is not such an undertaking in the direct path of its work, and if not, what, in fact, is the purpose of its being ?

ORIGINAL ARTICLES.

THE COMMITTEE-REPORT ON MEAT INSPECTION AND ACTINOMYCOSIS.

By Olof Schwarzkopf.

When I presented to the United States Veterinary Medical Association at the Chicago meeting, in 1890, a paper on the then undiscussed subject of meat inspection, I endeavored to embody my practical experience of the matter in a concise and systematic form.

Dr. W. L. Williams, Chairman of the Special Committee on Meat Inspection for 1891, brought forth a lengthy report at the national meeting at Washington in September last, in which he adversely criticises portions of my paper. It must be admitted that he produces some new and interesting points, for which he should be thanked; but he also makes some confusion, throwing things to the right and left in his peculiar way, and then leaves me to straighten them out again.

Knowing that I would be prevented from attending the last meeting in Washington, I tried hard to convince him of his mistakes, and I had the impression from his last letter that we were coming nearer to an agreement in some important points, and that the report to the Association would be unanimous. However, he has preferred to forward his original ideas, and hence this explanation.

Passing his introductory remarks, Dr. Williams acknowledges that he is in full accord with the principles of meat inspection as laid down in my paper, except in two instances. Firstly, he finds fault with the classification of diseases for the practice of the sanitary veterinarian, and suggests a somewhat new classification, which he calls scientific. Laudable as is such an effort, he has failed to give us anything better. A classification of diseased meats of the slaughter animals according to their degree of peril for the human consumer is not a dream of sanitarians, and similar attempts (Schmidt, Muhlhelm, etc.,) have proven a failure in practice. Dr. Williams shows that he has no comprehension of the difficulties that will confront the practical sanitarian in the slaughter-house, if he should be called upon to decide by the principles of so theoretic a system; he evidently overlooks the lack of our knowledge as to the degree of danger in far the larger number of animal diseases in relation to man as a consumer of animal food, and the great diversity of opinion on this question, based on observation and experiments of our authorities on public hygiene.

A scientific classification should be based on facts only, and as Dr. Williams can show no facts for the whole of his system, he naturally leaves a large number of diseases to be decided upon by mere guess-work and imagination. This is clearly seen under his class B, where he places "the flesh of animals which *may* contain chemical substances, which, when ingested, *may* produce serious constitutional disturbances." And under class C, "diseases produced by micro-organism, which also produce chemical poisons, which, when consumed, *may* produce toxic effects." I do not see how Dr. Williams is going to discover these chemical poisons in the slaughter-house. Besides the impracticability of his system, it cannot, therefore, be called scientific.

The classification I offered was not my own make. It is the one generally adopted in Germany, and has grown up from established facts and in conformity with practical principles. It has often been admitted that it has its faults, and I myself said so in my paper (on page 3), "This tabulation of diseases may serve for general purposes until through further research certain diseases are better understood; there will occur cases which will not fit into this classification; neither can any classification or direction as yet be made that will be a complete guide in all cases."

The other and far more important difference of opinion is as to whether actinomycosis is a contagious disease or not. On page 538 (October, 1891) of this journal, Dr. Williams gives a definition of contagion that is unnatural and strained; he also thinks that the word has changed its meaning since the bacteriological epoch of medicine. I differ with Dr. Williams. Contagion means to-day what it did two hundred years ago, namely, that a healthy animal must come in contact with a diseased animal to contract a particular disease, i. e., the origin of one disease is from the same disease of another living animal. This may be a rough definition, but it is practical, and no elaborate wording or laboratory wisdom can make it clearer or better. I am well aware that there is some confusion in regard to the term contagious in the English-speaking countries, and I believe that the cause of it—at least in the veterinary profession—is largely due to our worthy Principal Williams, of Edinburgh, who attempted to classify contagious and non-contagious diseases in his standard work on the Principles of Veterinary Medicine. But there are surely yet, as before, contagious and infectious diseases, and our great pathologists still apply both terms in a well-defined way. There are instances where it is almost impossible to say whether a disease is contagious or infectious, but that is no ground for abandoning one term where both can be used with advantage in a majority of cases. If the word contagious is used alone it becomes necessary to apply some adjective in order to define more clearly the character of a disease, hence the invention of the terms "highly contagious" and "dangerously contagious" which are really alarming terms, and which I saw first in that "highly sensational" pamphlet of the Illinois Live-Stock Commission, in which Dr. Williams occupied a prominent place.

Next Dr. Williams attempts to show that actinomycosis is a contagious disease. He enumerates several clinical observations where "inter-transmission apparently played a very important role." He recites cases seen by him and Dr. Casewell, and finds these and others "strongly suggestive." But that is the most he can say, and he is unable to introduce any positive evidence that could bring the much wanted light in this important direction. Then he recalls the experiments of successful inoculation with actinomyces, which are well known to the student of actinomycosis; he does not mention, however, the far more numerous instances where inoculation was a total failure, avoiding hereby the consequences which do not fit into his theory.

Dr. Williams in the above arguments in favor of the contagiousness of actinomycosis takes as granted certain premises which will not be accepted by everyone. The interpretation of the Peoria cases, where "the extension of the disease *seemed* due to the fact that badly affected animals were kept in the sheds with the healthy" (page 541, this journal), can reasonably be disputed. Dr. Williams concludes that here inoculation took place from the purulent discharge of the actinomycotic abscesses containing actinomyces. Others, however, will believe that the cattle were exposed to a common cause, and that here the actinomyces adhered either to the grain, or to the "very coarse, hard wild hay" that he mentions as being fed, which explanation is far more probable on botanical grounds. Prof. Bostrom some time ago announced the result of careful examinations made of actinomycotic tumors of cattle (thirty-two cases) and man (twelve cases). In the great majority of these cases he has been successful in tracing the causes of the tumor to kernels of grain, fragments of straw, etc., which he found in the starting point of the tumor, and which were profusely infested with actinomyces. These observations are confirmed by Saltmann, Bertha, Lunor, Schartan and Fischer, all of whom publish similar observations.

In the face of these facts only the theory of inter-transmission from animal to animal by cohabitation becomes highly improbable. Quite as rash is Dr. Williams in his conclusions as to the value of experimental inoculation of actinomycosis, which he calls the "crucial test" of contagiousness. The practice of experimental inoculation originated in the desire to continue the study of the pathological changes of mycotic diseases in the laboratory, and small animals were found to be particularly adapted to this purpose. It is true that it has been demonstrated in this way that some contagious diseases may be artificially transplanted, but there are also exceptions which break down the theory that such is a sure test for contagiousness. Pleura-pneumonia in cattle, for instance, has never been transmitted to any experimental animal, still it is justly considered a contagious disease.

On the other hand, we may inoculate a rabbit with the cocci of pus from an abscess and produce a severe disease and perhaps death, but nobody would look upon an abscess as contagious. Perhaps this example may seem ridiculous, nevertheless this and similar instances are facts which are not counted by some overzealous experimenters. With due regard, therefore, for the utility of artificial inoculation, it cannot, *ex ipso*, be accepted as proof of the true nature of a disease, nor does it explain the natural way in which the microorganism enters into the body. But suppose the inoculation theory of Dr. Williams were correct, how are we to explain the large majority of failures to transmit actinomycosis experimentally. Even in this country, where little has been done in this respect up to date, the results are mostly negative.

Dr. R. R. Dinwiddie, of the Arkansas Agricultural Experiment Station, in his report on actinomycosis says, "Cultivation of the fungus on artificial media outside the body has not been successful in my hands, nor have I succeeded in producing the disease in healthy animals by inoculation." Dr. Bodamer (Journal, Vol. X., No. 2, 1889,) reports very interesting experiments with dogs, cats and rabbits. Although he claims to have succeeded in producing "marked lesions in six out of thirteen animals" a careful analysis of his records rather leaves one in doubt as to whether he produced genuine actinomycosis. He undoubtedly saw the difficulty, and modestly says on page 120, "But the experiments, I confess, are not altogether satisfactory, not being repeated in sufficient number. * * * Control experiments with other than actinomyces material were not made because I had witnessed in the investigations of Dr. Formad very numerous experiments with *simple irritants* to terminate in precisely the same manner as my above stated experiments, etc."

My own experiments, sixteen in number, (three dogs, two cats, three calves, eight cattle), were entirely negative except in the calf of the cow from which I used the virus for inoculation. But after making an incision into the artificially produced tumor of the calf for microscopical examination, it gradually disappeared without any treatment whatever, and nothing but a slight scar left of it and the animal enjoys today, two years after the inoculation, the best of health.

From these experiments, which were skillfully performed and with the earnest desire to inform myself of the transmissibility or nontransmissibility of actinomycosis, I can frankly say that I have formed the firm opinion that it is difficult and at most times impossible to artificially produce true actinomycosis by inoculation from animal to animal, and that I cannot thus see how the natural propagation of the disease can possibly take place by intertransmission of animals, as advocated by Dr. Williams. This conclusion is the more unfortunate, as he delights in comparing actinomycosis with tuberculosis and glanders, which diseases radically differ from actinomycosis, in at least two points, namely : in the readiness to cultivate the bacilli, and in the result of experimental inoculation, which is so easily attained as to be useful for controlling a diagnosis.

But as critics may demand further evidence, it may be well to offer more cases of unsuccessful inoculation, and these are given in abundance by European experimenters. In fact they are so numerous that I must refrain from enumerating them here and can only refer to the latest contributions on actinomycosis by Prof. Bostrom in Ziegler's Beitrage zur pathologischen anatomie (neunter Band, 1891), which is so far the most complete treatise on this question.

Considering the matter as a whole from what has been published about actinomycosis during the last year, it appears that all our great authorities are becoming more and more of the opinion that actinomycosis is not a malignant disease. This view was very apparent at the last meeting of the International Congress of Hygiene in London, in August, 1891, and I shall shortly quote what some of these men had to say there about actinomycosis.

The Lancet, London, August 22, 1891, Section III—" Relation of diseases of animals to those of man." *Actinomycosis, Prof. Crookshank.* * * * With regard to intercommunicability of the disease between different species of animals, including man, he had failed to find any evidence in support of the theory from clinical observation. He was *not* of the opinion that the disease was contagious in the ordinary sense of the word. *Prof. Ponfick* (Breslau) said that he agreed in the main with Prof. Crookshank's conclusions. In cattle the disease was generally transmitted by means of the fodder, especially straw. He thought that in both man and animals the source was the same and that the disease did not spread directly from one animal to the other. *Prof. Nocard* (Alfort) said that the observations of Prof. Crookshank had been confirmed by all observers. The geographical distribution of the disease was very irregular. Bavaria, Scotland, Italy and some of the northern states of America had been much affected. In France it was very rare and generally remained in an isolated form. He had never seen cases transmitted by contagion or infection. The disease appeared to him undoubtedly to spread by means of certain food-stuffs. The wholesale destruction of the flesh of the affected animals appeared to him to be quite unnecessary. *M. Doyeu* (Rheims) read a paper on three cases of actinomycosis in man, which he describes at length. He maintains that not only by the courses of the disease, but also by the different appearances of the fungus, one should be able to distinguish between the bovine and human forms. As regards the etiology, these three cases all come from the environs of Rheims; they lived in the country and one of them had a habit of chewing grains of oats and barley. *Sir Henry Simpson* remarked that in his district the disease was not endemic, and when imported, though it did not cease with the animals imported, yet it did not spread like a contagious disease. As to whether the meat from these carcasses was fit for human consumption, he was content to permit its sale provided the locally diseased parts were cut away. *Dr. George Fleming* commented on the grave doubts which existed of the direct communicability of this disease to the human species; if, therefore, an animal were in good condition and showed no fever, then its flesh was good to eat, but the actually diseased parts should not go into market. *Prof. Crookshank* in reply said that in comparing the disease with tuberculosis it should be remembered that it was not by any means so virulent as tuberculosis.

These short extracts are certainly valuable, as they show us the moderation of opinion of some of our best authorities on actinomycosis.

After having exhausted his attempts to show all the bad features of actinomycosis of man and animals, Dr. Williams becomes quite comical and produces the following tirade:

> "A long list of the leading scientists of the day might be quoted, who believe in the contagiousness of actinomycosis, such as Bollinger, Ponfick, Johne, Friedberger, Frohner, Rosenbach, Bizzozero, Lindquist, Heller, Peroncito, Ochsner, Crookshank, Fleming, Liautard, Law and others, almost without number. In fact it seems, in so far as your chairman has been able to learn, that contributors alike to standard and current veterinary literature of a recent date all are agreed that the affection is contagious. We understand that Prof. Schwarzkopf and other dissenters have given voice to their theories and deductions through the columns of the agricultural or live stock press, and avoided placing their views in form or place where it would come within proper range of scientific criticism. We trust that now, for once, Prof. Schwarzkopf and his colleagues will present their non-contagious theory of actinomycosis before this convention, from a scientific standpoint, and permit their arguments to be weighed upon a strictly scientific as well as practical basis. We desire that Prof. Schwarzkopf should fully explain his statement at our last meeting that he predicated his belief of the non-contagiousness of actinomycosis on his theoretical studies, and his practical work in the great abattoirs of Berlin. What great veterinarians of Berlin taught our fellow-committeeman that actinomycosis was non-contagious while such Germans as Johne, Ponfick, Rosenbach, Friedberger and such veterinarians of the great Berlin Thierartzlichen Hochschule as Frohner, unitedly and without fear or apology denominate the disease as infectious? What facts has he learned in the slaughter-house of Berlin that demonstrate the non-transmissability of the disease?"

To this I have the following to say: Bollinger and Friedberger were my teachers and neither of them have ever said that actinomycosis is contagious, which may be said to their honor. Ponfick, Johne, Frohner, Peroncito, have said that actinomycosis is infectious, by which they mean that the micro-organism has its natural origin outside the animal body on vegetable life, but if introduced into the body accidentally produces a diseases. Crookshank and Fleming have similar opinions. Rosenbach, Bizzozero, Lindquist, Heller are unknown to me. Liautard and Law have pronounced the disease contagious, for which I have no explanation to offer except that I believe that Prof. Liautard holds a different opinion to-day.

I have not "avoided placing my views in form or place where it would come within proper range of scientific criticism," as I have had no fears to cross swords with Dr. Williams on scientific questions. The fact is that our American veterinary journals paid no attention to actinomycosis, but this was done by the better agricultural press. The *Breeders Gazette*, in commenting upon the pamphlet No. 1 of the Illinois Live-Stock Commisioners, in their issue of March 5, 1890, called forth several articles of Prof. James Law, who strongly advocated the contagiousness of actinomycosis, and it was not until he rejected—in a somewhat left-hand way—the statements of my former chief, Dr. Hertwig of Berlin, that I participated in the discussion in the *Breeders Gazette*, defending Hertwig's position. This was *public writing* and could be followed by any veterinarian who keeps acquainted with our agricultural press.

My theoretical studies and practical work at the great abattoirs of Berlin have naturally shaped my opinion of actinomycosis. Dr. Williams seems not to be aware that the Berlin abattoir has a bacteriological laboratory, which, superintended by Director Hertwig, its energetic chief veterinarian, is in charge of Dr. Dunker, a well known microscopist, who discovered the actinomyces of the muscles in hogs. From 1883-1885, while being employed there, numerous fruitless attempts were made to cultivate the actinomycosis in ordinary ways, together with inoculation experiments, which likewise failed to throw any light on the peculiarities of the fungus. He naturally gained the impression from these experiments, and by the information gathered from rural districts from which the affected animals arrived, that the disease could not be pronounced contagious.

The practical conclusion from what I have tried to explain in the foregoing pages certainly warrants the necessity of changing the modus operandi of some of our sanitary inspectors. I am strongly of the opinion that it is the duty of the sanitary veterinarian to *rather preserve meat than destroy* it. Sentimentalism such as the arguments of the abhorrence of the American for meat from animals not strictly sound, is out of the way, as it throws a vail over the naked facts of science. It may be pardonable if uttered by a layman, but it is inexcusable in a veterinarian that has intelligently studied the theory and practice of sanitary science. Of course, we should condemn an animal that is suffering from general actinomycosis, which, however, is very rare. But it is unjust—alike to producer and consumer—to reject meat of good quality from animals because they have shown so visible an affection as lumpy-jaw, whereas we may daily consume meat of animals suffering from a more or less dreadful disease, such as we find in the slaughter-house only, but which is naturally overlooked under our present system of inspection of the living animal only.

I sincerely hope that the extreme views and teachings on actinomycosis by some of our American college professors may become more moderate; for there is nothing to gain from obstinably declaring actinomycosis to be a contagious and dangerous disease, but much to be lost in spreading broadcast such alarming professional opinions, which are at once injurious to our cattle-industry and to the scientific standing of the veterinary profession of this country.

THE USE OF LITHIUM IN VETERINARY PRACTICE.

By S. S. Baker, D.V.S., Chicago, Ills.

(A Paper read before the Illinois State Veterinary Medical Association).

In casting about for a subject for your consideration that was not already worn threadbare, it occurred to me that a brief statement of my experience in the use of a new remedy I had been using of late with a good deal of success might be of interest to you. The use of lithium has only of late been introduced to any extent in medical practice, and not at all in veterinary practice as far as I have been able to discover; and why it has remained an obscure and untried drug so long I am at a loss to understand. I certainly have found it a very valuable addition to our list of remedies, its only objection being its expense.

Lithium salts, like the potassium, are of an alkaline nature; and while the two salts are alike to a certain degree, they differ very materially in some of their actions, the principal difference being the solvent power of lithia over uric acid, with which it forms a very solvent salt, while the potassium salts have no such power. There are five salts of lithium that are officinal, viz., the bromide, benzoate, salicylate, carbonate and citrate; the last two are the only ones applicable to our patients. While the carbonate has an alkaline reaction, it is nearly insoluble, taking one hundred and thirty parts of water at 59° F., and about the same amount of boiling water; is wholly insoluble in alcohol; therefore this salt is only available when given in powder or bolus.

The citrate of lithium is very soluble, dissolving in 5.5 water at 59° F., therefore this salt is the one I wish more particularly to call your attention to. While the citrate has a neutral reaction, and is useless as a local alkali for the neutralization of acids, it is transformed to a carbonate after becoming absorbed into the blood; constitutionally therefore it is the equivalent of the carbonate and is finally eliminated by the kidneys. While the salts of lithium are, as the potassium salts, powerful diuretics, they are less irritant to the stomach and kidneys, and on this account are far preferable, in the treatment of the disease I am using it for, to the potassium salts. The disease in which this drug is the most applicable is azoturia, and to my mind it far excels any other drug for that purpose. I will cite a few cases where I have tried it to my utmost satisfaction.

Case I. Seven-year-old truck horse taken with azoturia four miles from home. The driver noticing something wrong with him got him unhitched and into a livery stable before he went down. I got to him one hour afterwards; found him unable to rise, sweating profusely and struggling furiously. After passing catheter, I prescribed lithii citras in doses of ʒ ii, together with tinct. gentian every three hours. Next day found the horse able to pass urine, and making very good efforts to rise. I reduced the lithium to ʒ i doses three times a day. Next day I found horse standing, but moved about with difficulty. I continued the lithium for two days longer, when I changed to nux vomica. Horse walked home in ten days.

CASE II. Driving mare, nine years old, brought to hospital, having been taken close by. She went down immediately after being admitted; passed catheter and gave lithii citras in ʒ ii doses every three hours for twenty-four hours. Second day mare got up and passed urine without the aid of catheter; reduced the doses of lithium to ʒ i three times a day for two days longer, when lithium was stopped and cinchona, etc., was given, the mare making a good recovery in a week.

CASE III. I consider this case of the most importance as demonstrating the applicability of this drug in the treatment of this disease. I was called to see a six-year-old cab horse suffering with what was supposed to be colic. I received the call at nine o'clock P.M., and found that the horse had been down since five o'clock that afternoon, the owner thinking it a case of colic from which he would recover without assistance. I found the horse in a profuse perspiration, unable to rise, although making frantic efforts to do so. I found considerable hyperæmia of the muscles of the lumbar region, some fever, pulse rapid and hard, with considerable delirium. After passing catheter I prescribed lithii citras in doses of ʒ ii every three hours and bromides every three hours alternately. Applied hot salt to loins. Next morning I found the delirium gone and horse resting easily. The attendant thought the horse had urinated, but passed catheter and found that he had not. I stopped the bromide, still continuing the lithia with the addition of tinct. gentian. Passed the catheter again at night. Next day the attendant was positive the horse had urinated, consequently did not pass the catheter again. The horse remained down ten days before being able to rise, when he would stand a few minutes and lie down again. I continued the lithium every three hours for four days, when I changed it to three times a day in ʒ i doses, with the addition of cinchona and nux. One week from the time he got up he walked about, but was very lame. He improved very rapidly, and went to work in about six weeks from time he was first taken.

Since beginning the use of lithium I have had a number of cases of this malady, with only one fatal result. A draft mare being brought to the hospital in an ambulance, she was dragged to box stall on her side, and expired four hours afterwards.

While not claiming that this drug is a specific in this trouble, it has certainly given me more satisfaction than any other I ever used. If in bringing this subject to your notice it is the means of assisting any brother practitioner in the treatment of this, the bugbear of all diseases to the profession, I will feel that my efforts have not been in vain, and I would be most pleased to hear with what success any of you may meet after trying the drug.

SCIATICA.

By John Scott, V.S., Peoria, Ill.

(A paper read before the Illinois State Veterinary Medical Association.)

During the summer of 1890 I was called upon to treat the following case, which I diagnosed as sciatica, and as I have only seen two such cases during a practice of six years, both of which occurred under conditions almost identical and both in horses kept for racing purposes, I judge that such cases are somewhat rare in our patients. I am forced to this conclusion not because I have only been fortunate enough to see two cases, but from the fact that in all the works on veterinary science that I have had an opportunity of reading, I fail to find such a disease even mentioned, and in our veterinary journals the only place I see such a disease referred to is in the March 1889 number of the Review, where a case is recorded, but that is an extract from a foreign journal. For these reasons I call your attention to it to-day, and hope it may prove as interesting to you as it did to me.

I was called to the case on Wednesday, July 22, 1890, during our summer race meeting, and on reaching the driving park found that the animal affected was a seven-year-old pacing gelding, record 2.24¾.

I asked for and obtained the following history of the case from his owner.

He had been started in his first race of the season at Bloomington, the first week in July; next week was in a hard contested race at Springfield, after which he went a trifle lame in near hind leg. The next week he was in Decatur, but was not started; from Decatur was shipped to Peoria, arriving here on Sunday, July 19th. On Monday, Tuesday and Wednesday mornings he was jogged for a few miles on the track, but being still slightly lame his owner concluded to ship him home until fully recovered, but when they started to lead him to the shipping platform, they only got about three hundred yards from the stall, when he was taken so suddenly and violently lame and seemed to be in such agony that it was almost impossible to get him back to the stall, where I saw him about half an hour later, presenting the following symptoms: His general appearance showed at a glance that he was suffering intense pain of a nervous character, there being nervous twitchings and slight clonic spasms of the muscles, holding the near hind leg clear of the floor, but continually moving it in a convulsive, jerky, nervous manner, nostrils dilated, breathing very much accelerated, pulse 85 and weak, temperature 103°; body covered with perspiration.

A close and careful examination of the foot and leg revealed nothing wrong, but on manipulating the hip and thigh the symptoms were very much aggravated, the poor animal groaning from pain on pressure being brought to bear on these parts and clonic spasms of the muscles being much more severe.

I gave potassium bromide ℥ss, and also morph. sulph. grs. iv. hypodermically, injected a five per cent. solution of cocaine into the muscles of hip and thigh, and ordered hot woolen blankets applied to the hip.

On my return in about two hours I found him in about the same condition, suffering intensely, sweating profusely, but body cold.

To satisfy the owner I passed the catheter, and drew off a small quantity of natural looking urine. I then gave him potassium bromide ℥ss, chloral hydrate ℥ss and gelsemium fl. ex. ʒi; in an hour repeated the bromide and gelsemium, and after that every two hours; kept hot blankets to the hip and used an anodyne liniment. At 10 P. M. he was feeling easier, so I left him in charge of an attendant, with instructions to give two doses of bromide and gelsemium during the night.

I saw him next morning about five o'clock, when he was looking and feeling better. He had turned round in his stall during the night, being the first he had changed his position, but would bear no weight on the affected limb.

I continued giving the bromide and gelsemium every four or five hours, gradually decreasing the dose as the nervous symptoms disappeared, and on the fifth day discontinued them entirely and prescribed tonics, as his appetite was very poor.

During this time I had been treating the hip and thigh with hot blankets and anodyne liniments, but as the gluteal muscles began to show signs of becoming atrophied and the pain still being severe, I applied a blister to the parts. The third day after applying it we led him out of the stall for the first time, but he would scarcely bear any weight on the affected limb; merely touching the toe to the ground. But as the owner was anxious to get away, we concluded to try and move him to my hospital, which we did the following night, where he laid down for the first time. He laid down pretty regular after this, but had to be helped up for several days.

I continued giving him tonics for about three weeks before he regained his appetite, and by this time he wasn't much more than a shadow, but was able to walk out for a little exercise, and from this time on he improved quite rapidly.

The gluteal muscles became very much atrophied, but this I finally overcame by repeated blistering.

In about six weeks from the time he was admitted to the hospital I put him in harness for the first time and drove him a few blocks; after this gave him regular exercise and in sixty days from the date of admission I sent him home all right in every way except that the gluteal muscles were still slightly atrophied; but I had an opportunity of seeing him again in about six weeks, and at that time they were entirely filled out and had regained their natural appearance.

The other case I saw was during our race-meeting in July, 1891, and occurred in a seven-year-old trotting gelding, record 2.22¾. He started in a race on Thursday, winning two heats, when darkness came, and the race was postponed. The next day he came out all right, but in scoring down for the first heat, he went suddenly lame in near hind leg, so lame that it was difficult to get him to his stall. He presented the same symptoms in general that the other horse did, but not nearly so severe. I treated him the same as my first case, and in about a week he was sufficiently recovered to be shipped home.

NAVICULAR DISEASE.

By W. Bryden, V.S.

(Paper read at a meeting of the Massachusetts Veterinary Medical Association, February 24, 1892).

This article was intended for the meeting of our Alumni Association, at Montreal, which was unavoidably postponed. With your indulgence, I will present to you a short contribution on one of the diseases peculiar to the locomotive organs of the horse, *Navicular Disease.*

Prof. Dick says, "By high authority it has been called *the curse upon all good horse flesh* (though in passing we remark it is rather the infliction of man than of any higher power)." He then asks, after fairly and generously quoting the opinions of Mr. Turner, Mr. Percival and others, "Why then appear to differ when substantially we agree? Not that we are here arguing for concession which will compromise the truth; but we hold that the united, persevering ingenuity of scientific men has fully illustrated this disease; that it has predisposing causes, such as want of paring, shoeing, and still more, bad shoeing, hereditary tendency of particular breeds, and high condition. * * * In like manner it has manifest exciting causes, such as strain of the tendon and over-exertion, pressure of the sole, from traveling with a stone in the foot, etc., etc."

The above are remarks by one who was a leader in our profession, and one whom all will long delight to honor and applaud. His efforts were directed to finding the "proximate cause" of this disease; consequently he endeavored to demonstrate that strain and over-extension of the tendon, where it passes under the navicular bone, injures the synovial capsule between the tendon and navicular bone. This he believed to be the primary and permanent disease.

Now we do not quote the above because it is correct, but because it is as nearly being so as anything on the subject found in works of much greater pretensions, published many years later. In both old and recent publications we find confusing statements and accounts of the views and theories held by old veterinarians, many of them eminent in their day and generation, no doubt, and interesting too; but they are more conspicuous now as picturesque figures in the history of the profession than for the exactness of their knowledge of those *diseases peculiar to the locomotive organs* of the horse; having failed to distinguish between such diseases, and those liable to afflict all classes of animals, a fault still found in recent works, which repeat the same old story with slight variations, because their authors view the hoof from a standpoint that did not credit it with the far-reaching influence it possesses and exerts.

For this reason I trust you will not consider it over-presumptuous on my part, with no better acquaintance with pathology than the ordinary practitioner possesses, to try to change the tale, be it ever so little. In the study of this subject, our attention is first directed to the fact that the soliped stands and moves on the points of his toes, which are covered and protected by a "horny box," a wonderful organism, having a limited elasticity and accommodation within it, and very liable to be affected adversely by surroundings and circumstances unfavorable to its organization and growth.

This liability to change on the part of the hoof in its size, shape and quality, has a most important bearing on the organization, not merely of itself, but also of the structures contained within it, and on different parts of the limbs as well; indeed, the whole conformation of the animal is changed by acquired conditions of this wonderful "buffer," so unlike the foot of every other species of animal, that it must be the part *primarily affected*, the part that predisposes to and determines the character of such diseases, and the part that must be first treated, if the cause is to be philosophically studied, and successfully removed or overcome. For with an integument as soft and pliable as the skin, instead of the "horny box," it must be impossible to produce navicular disease, bone spavin, and many other diseases and defects with histories such as theirs, which we are now familiar with; just as there must be many diseases peculiar to horses' limbs that could not occur on the limbs of other species than solipeds.

Let us now suppose a horse having received a severe blow with a club at the seat of ordinary bone spavin, or that his mate has kicked him there, and a bony growth or deformity results, somewhat similar, perhaps, to true bone spavin. It could hardly be regarded as good pathology to either name, or similarly classify, diseases having such dissimilar histories and causes, any more than it would be to regard degeneration of the navicular bone, as met with in true navicular diseases, as the same disease of the same bone, the result of inflammation from a nail having accidentally or otherwise penetrated it.

In comparative work of this kind, clean lines must be drawn to give the student an exact, logical and intelligent appreciation of the subject. It must not be forgotten that while the hoof is liable to be affected adversely by heat or cold, moisture or drought, tear and wear, or idleness, etc.—extrinsic and intrinsic influences—it is possible to guide its growth in a right or wrong direction, and it can be cultivated with as much success as the gardener acquires in guiding and training his bulbs and rare plants.

In practice we often meet with cases of navicular disease, and with cases of disease of the navicular bone, for they are quite distinct. For example, we find, 1st. True navicular disease, a gradual contraction of the hoof from bad surroundings, and neglect after birth, coupled possibly with some heredity; causing a slow change leading to *necrosis*, or gradual death of the bone.

2nd. A modified form of the above, hastened by such an accident as a prick with a nail that did or did not reach the bone.

3rd. Disease of the navicular bone, from its having been, for example, injured by a nail or other instrument, the bone itself being penetrated; inflammation is set up *in the cancellated structures* of both the *interior of the bone* and the *compact structures* at the same time. Here then are three varieties at least: In the first, hereditary or acquired predisposition. In the second, hereditary or acquired predisposition, coupled with accident. In the first and second then we find contraction *both* as a *cause* and as a *result* or *effect*. In the third, accident only; here contraction may only be as a *result* or *effect*.

To some such fine distinctions may appear frivolous, but it must be evident that the history of a lame foot is of much importance, especially to the breeder; whether the derelict hoof is covering a case of true navicular disease, either of heredity or of acquired origin, or a case of disease of the navicular bone, resulting from an accident or wound, and independent of the character of the hoof.

In looking over a recent edition of Prof. Williams' excellent Book of Surgery, one is surprised at statements like the following, on page 333, which must handicap the student in the study of such a subject. He says:

"Contraction of the hoof is not a cause but an effect of disease; an atrophy of the structures contained within the 'horny box' consequent upon diminished functional activity and adaptability of the hoof to the atrophied structures which it encloses and protects."

Continuing, he adds, "Prof. Dick said there was a kind of contraction of the hoof, in fact a *natural tendency* to this, in the domesticated animal arising from a want of moisture when he is confined to the stable. This kind of contraction, he [Prof. Dick] maintained did not cause lameness, as all the parts became adapted to the alteration of the hoof. Now in my [Prof. Williams] opinion this kind of contraction would be the one most likely to cause lameness; indeed, it would be impossible for an animal not to be so, if the pressure of the drying hoof were sufficent to cause atrophy and absorption of the sensitive tissues within." Again, Prof. Williams asserts the following: "That horses' hoofs do become contracted, more especially at the heels, without lameness, I do not deny. I do not think, however, it is due to any want of moisture, but to the removal of the horn from the heels, etc., etc."

With all due deference to this eminent author and teacher, permit me to submit that the contention that "contraction of the hoof is not a cause but an effect of disease" cannot be sustained, for it is quite possible of demonstration that it must be *both*. *Atrophy of the frog*, for example, when the result of mechanical pressure between the bars, is immediately arrested and can be restored by paring out the bars and keeping them soft; in other cases the bars can be left strong, but the wall must be weakened so it will bend outward, with the same result. Sometimes it is an advantage to reduce the wall at the quarter, or quarters, and at the toe, from the coronet to the shoe. This prevents the hoof from collapsing, and when properly done it relieves the circulation at the coronet, the hoof grows more robustly, the foot is less confined, and repair within it goes on more rapidly. But it is a most important matter to know how to pare a hoof, as it can be done right or wrong, too much or too little, and it requires practice.

Contraction from "atrophy of the structures contained within the 'horny box' consequent upon diminished functional activity and adaptibility" [Prof. Williams], and Prof. Dick's theory of natural *tendency of the hoof to contract* is rather a fine drawn distinction and quibbling likely to confuse many a student, for cases where both contentions are illustrated can easily be found every day. Then, why mix up the terms "contraction" and "navicular disease?" "Contraction is often found without navicular disease," but "navicular disease" never without "contraction," and within certain limits, always the same kind of "contraction," too. One may claim that the hoof must be pared; the other, the opposite; and that "adaptability" is or is not "contraction" might also be a contention, but will not get us out of the old ruts.

At the foot of page 335 Prof. Williams again informs us that "During the past five years, I [Prof. W.] have made numerous post-mortem examinations of 'navicular disease,' and am convinced that strain or laceration of the tendon is never a primary condition, and that the disease commences as an inflammation of the cancellated structures of the navicular bone, or of the cartilage upon its inferior surface." Impossible! there is a history, and slow, gradual changes in the hoof and soft structures within it and covering the bone, without which it would not be "navicular disease."

Inflammation of the cancellated structures, and of the inferior part of the cartilage, can only be present as the result of an accident, never at the beginning of *true* navicular disease, which is a slow, gradual process when not complicated; the bone degeneration is always the result of *slow starvation* of the structures within the bone. The tissues surrounding the bone become disturbed, perhaps congested, by the pressure or interference of the hoof, especially the sole and bars. This extends to, and affects the membrane covering the bone and lining the foramen, its functions are perverted, the elements intended to nourish the bones are refused admission or diverted; a process of *necrosis*, rather than *caries*, gradually follows; small particles of the rejected or arrested bone elements may then be transplanted or deposited on the exterior of the navicular bone, very much as in the degeneration of the cancellated structure in *true bone spavin.*

It is said on page 342 that "contraction of the foot always *succeeds* navicular disease;" with equal truth it can be said that contraction of the hoof always *precedes* it. For it always does *both* if the disease continues; at first, as an *exciting cause;* afterwards, as a *concurrent affection* or *process.* For example: If a strong, robust, symmetrical, well-developed horse receives a serious injury which compels the suspension of his limbs for months (it may be free from much pain), it diminishes in size, every part being involved in the *general* atrophy or wasting; the hoof contracting as the enclosed tissues waste from what Prof. Williams calls "diminished functional activity and adaptability." The animal recovers without scar, pain, or lameness; the tissues protected by the elastic skin soon regain their volume, but the soft tissues protected by the contracted hoof cannot. The hoof, having shrunk, has acquired a shape and size determined mostly by the coffin bone within. When standing idle, there is *nothing to cause irritation*, but as soon as put to work disturbances follow; then, instead of a general atrophy, we find atrophies and changes of particular parts, according to the shape, size and quality of the hoof, the degree of disturbance, and the demand made on it. *Changes*, the result of "diminished functional activity" and "adaptability," and *changes*, the result of disturbance, especially at the extremities, are therefore quite different conditions.

The hoof peculiar to navicular disease may be a hind one or a fore one; usually small; it has modifications. Consequently we find different degrees of the disease. One or both heels are shortened; one or both heel cartilages are bent inwards; one or both bars crowd; one or both halves of the frog diminish; one or both sides of the wall shrink, and the hoof is twisted, dry and hard, toeing out or in. When long idle, it is often cold, but when exercised it is hot. Every feature of the case proclaims mechanical interference by the "horny box," and demands treatment with the drawing knife, buttress and rasp, followed by persistent softening with poultices or otherwise, which will encourage repair and growth without the aid of the tortures now so universally popular in such cases.

Where we find such disturbance at the extremity there must be strain of the tendon, for there is always *shortening* of it when there is atrophy, just as we find *relaxation* in paralysis when the injury is central.

This is illustrated in cases of shortening of the flexor tendons, as when the animal is compelled to walk only on the points of his toes (hoofs); in atrophy of the hip and tail muscles—the result of contraction of the heels and bone spavin—as when the tail is drawn to the atrophied side instead of going to the side on which the muscles are strongest—as it does in paralysis—the result of a central lesion or an injury; and again, in cases where the gaits and action acquired—and peculiar to the horse—are equivocal or faulty, either from peripheral disturbance or inharmonious organization of their limbs, from this or possibly some other cause.

The fact is, the hoof has never been appreciated at its proper value. No matter how defective it may have been, it has not been regarded as a factor of so much importance as it is in diseases and wrong conditions of itself, which involve the limb above.

VETERINARY LEGISLATION IN 1891.

By Henry A. Riley, A.B. LL.B., New York.

There was a large amount of legislation enacted in 1891, on medical, pharmacal and dental matters in the various States, and the interests of veterinary science were not lost sight of in the mass of other legislation.

In Colorado, Michigan, Missouri, North Dakota, Oregon, Pennsylvania, Tennessee and Wyoming, statutes were passed, some of which were of importance and interest, whlle others were slight amendments of existing laws.

In Colorado the law was amended so as to make the term of office of the State Veterinary Surgeon two years and the salary was fixed at $1,500. The incumbent was required to give a bond of $10,000 for the faithful performance of his duties.

In Michigan an interesting law was passed for the elevation of the profession, which authorized the formation of incorporated societies. These corporations were to be organized for the "acquisition and dissemination of knowledge pertaining to veterinary medicine and surgery, and for the elevation of the standing of professional education and the association of members of the veterinary profession for mutual recognition, advancement and fellowship."

The incorporators were to be nine in number and must have received the degree of doctor of veterinary medicine and surgery from any medical school or college.

The articles of incorporation were required to state the objects of the society and it could have a legal existence for thirty years.

The requirements for membership were that the applicant must have sustained a reputable practice in Michigan or elsewhere as veterinarian for two years, with at least one year's study in the office of a reputable veterinarian or one collegiate year in a reputable veterinary college.

The terms of admission must also conform to the law of the State, if any should be enacted, regulating the practice of veterinary medicine and surgery.

The societies were allowed to hold property by gift and otherwise to the amount of $10,000.

In Missouri the duties of veterinary protection were trausferred from the State Agricultural College to the State Board of Agriculture, and the salary of the veterinary surgeon was fixed at $2,500. The deputy veterinary surgeon was to receive $7 a day.

In North Dakota the office of State Veterinarian was created and his duties carefully detailed. He was directed to investigate all cases of contagious disease and to make visits of inspection to all localities where he was informed or had reason to believe contagious diseases existed. He was authorized to seize and inspect all animals temporarily unloaded, when the owner did not produce a certificate of health from the State veterinarian or examiner in another state.

All pens, cars, etc., are required to be kept in good sanitary condition and were to be fumigated and disinfected if necessary.

In the case of all animals coming into the State he was directed to demand an affidavit that they had not been exposed to any contagious disease for ninety days.

He was authorized to order a quarantine and if a disease should become epidemic it was his duty to notify the Governor, who was then to issue a proclamation forbidding the transfer of animals without a health certificate.

Animals could be slaughtered if diseased, and were to be buried at least four feet deep.

The county sheep inspectors were required to report monthly to the State Veterinarian. The salary was fixed at $2000 and expenses.

In Oregon the State veterinarian was authorized to employ local inspectors to ascertain the existence of contagious diseases and to establish quarantine and make sanitary regulations; when informed of the existence of disease he shall adopt measures to prevent its spread.

A commission could be appointed to appraise and kill animals when necessary.

The State Veterinarian was authorized to call on sheriffs, constables, etc., to execute his orders. The salary of the office was fixed at $1,500 and expenses.

In Pennsylvania the time for the registration of veterinary surgeons, which was fixed in 1889 at six months, was extended to January 1, 1892.

In Wyoming the salary of the State Veterinarian was reduced from $2,500 to $1,800 and his traveling expenses were not to be more than $750.

In addition to these statutes referring directly to the veterinary profession and the duties of its members, there were a considerable number of laws passed relative to the health of animals, and some of them are as follows:

In New Mexico a Sanitary Board was established and its duties in regard to the inspection of animals specified. In cases of scab sheep were ordered to be dipped.

In New Hampshire a State Board of Cattle Commissioners was organized, with quarantine powers regarding contagious diseases among animals.

A State Board of Live Stock Commissioners was organized in Wyoming.

In Oregon penalties were presented for the pollution of water to which live stock had access.

In Kansas a law was passed to prevent the spread of Texas fever among cattle.

In Delaware, Texas or Cherokee cattle were allowed to be brought into the State if taken immediately from the cars to the slaughter houses.

The importation of domestic animals affected with contagious or infectious diseases was made a misdemeanor in California.

In Ohio the bodies of such animals were to be burned or buried.

In Arizona the inspection was authorized of live stock about to be killed for sale, or to be shipped or driven through the territory.

In Missouri quarantine was directed for all animals affected with glanders, and in South Carolina the importation of horses or mules affected with this disease was forbidden.

Sheep inspectors were appointed in North and South Dakota and their duties specified. This was also done in Wyoming and Texas, and the examination of sheep authorized to prevent the dissemination of scab.

In Oregon the running at large of infected sheep or their sale was forbidden.

In West Virginia the United States Inspectors were given privileges in regard to the detection and prevention of pleuro-pneumonia among animals. The inspectors could have the assistance of sheriffs and other officers, but the expense of the work was to be borne by the United States.

REPORTS OF CASES.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

JABOT, OBSTRUCTION AND STRICTURE OF THE ŒSOPHAGUS

By E. J. Nesbitt, D.V.S., House Surgeon.

The patient, a roan gelding about seven years of age, was brought to the hospital for treatment on the afternoon of January 28th, with the following history:

He had been given his usual mess for breakfast, which he ate heartily, and afterwards drank freely of water. After caring for him in the usual manner, the groom left him, to return at noon to feed him again, when he found him "choking," as he expressed it. Thinking that perhaps something had lodged in the gullet, he gave him a drench of oil, but this, instead of relieving the difficulty, appeared rather to increase the irritation. When the animal was brought to us, his temperature was normal, and respiration, though slightly hurried, was not difficult. The pulse was about forty and in good condition. There was a very frothy discharge from the nose and mouth, and at the base of the neck, on the left side, a swelling could be seen and felt, about the size of a man's fist, and some two or three inches long. How far this swelling extended inside the thorax we failed to discover. At very short intervals he was seized with spasms of the muscles of the cervical region and also of the face, which during their continuance gave him a very agonized aspect. The spasms were occasionally accompanied by a discharge from the nostrils of a quantity of frothy mucus, which gave him the appearance of vomiting; and at every spasm, and often between them, he uttered a short, sharp and peculiar cry. That relief must be prompt, to be effectual, was very evident.

The animal was therefore thrown, and after some difficulty a long rubber catheter was introduced into the pharynx and œsophagus as far as the entrance of the chest; but unfortunately it was too short to reach the point of dilatation and dislodge the obstructing body. A hard rubber or whalebone probang was then tried, but because of its inflexibility could not be inserted beyond the soft palate.

The owner was then informed that œsophagatomy was the only remaining resort; but, in view of the rather unfavorable aspect of the case, he preferred the destruction of the animal. Mucilaginous drinks were offered, but even the slightest effort at swallowing excited such an accession of spasms that we felt compelled to leave him entirely to the processes of nature. The next day he was, if anything, worse. The temperature had risen one degree; the pulse had become more rapid, and was weaker; and respiration was hurried, although the lungs were perfectly normal. The spasms and the accompanying symptoms had become exaggerated, and he continued steadily to grow worse, until the morning of the 31st, when he was relieved by pithing.

At the post-mortem a portion of the œsophagus, extending from the pharynx to the stomach, was removed and found to be diseased, being congested and softened throughout its entire length. At about the point where the œsophagus passes between the first and second ribs there was a dilatation of perhaps the size of two closed fists, which was not of recent occurrence, but must have existed for a long time, the mucous coat, in fact, protruding for a length of some six inches through a laceration of the muscular covering, the fibres of which were irregularly but intimately adherent to the protruding portion of the membrane. Farther back, at about the middle of the thoracic portion, the obstruction was found in the form of a plug of impacted food, resembling a large, elongated bolus, which filled the œsophageal tube for a space of at least two or two and a half inches. This was quite dry, and consisted of chewed hay, straw and oats. Posterior to the plug, the stricture was plainly discovered, the tube being contracted precisely as if ligated. Back of this the œsophagus was normal. Had this bolus been crushed or displaced, the animal might have made a temporary recovery.

Some interesting questions are suggested by this case, these amongst them: "Was the stricture due to the irritation caused by the plug, or did it exist before?" Whatever the answer may be, would it justify the combination in suspected similar cases of internal anti-spasmodic prescriptions with the external local and surgical methods which constitute the general rules of the classical treatment of affections of this nature?

EXTRACTS FROM FOREIGN JOURNALS.

CAUTERIZATION IN ULCERATIVE KERATITIS.

By M. P. Haan.

No one possessing a familiar knowledge of this affection can be unaware of the serious nature of its usual symptoms, and the results which commonly attend it. Following simple keratitis, conjunctivitis, or traumatism of the cornea, it is also commonly seen in distemper; but in all its forms it is apt to be more or less irresponsive to treatment, whatever may be its character, or whatsoever may be the medicaments employed, whether vegetable or mineral astringents, solutions of alum, or sulphate of zinc, or copper, or iron, or collyria of alcohized water, or even the nitrate of silver caustics, or corrosive sublimate, as recommended by Nocard.

The author, having treated several cases of traumatic ulcerative keratitis, has had recourse to actual cauterization with very fine points, applied superficially on the edges of the upper eyelid; a fine knitting needle forming a very eligible instrument for the operation. For local treatment of the globe, he applied on two occasions the pencil of sulphate of copper, and in about ten days there remained but a small leucomatous cicatrix, which was soon removed by the insufflation of pulverized rock candy and calomel in equal parts. —*Rec. de Med. Vet.*

TREATMENT OF HEMORRHAGIC PHLEBITIS.

By M. G. Maris.

[The operation of phlebotomy being seldom performed by American veterinarians, the complication referred to is not likely to be often encountered in their practice. But when it occurs it sometimes constitutes a serious accident, and the hemorrhagic flow becomes difficult to control. The author's remarks may prove of interest and profit to our readers. —Ed.]

The wound being thoroughly cleaned, and the hair cut short, the head is kept well extended on the neck in order to judge accurately as to the amount of the hemorrhage. If this is abundant, a temporary hemostatic ligature is applied above the wound caused by the bleeding and from which the blood escapes. The wound is then thickly covered with iodoform, over which is placed a layer of collodion, containing 1 per cent. of iodoform and of perchloride of mercury, and this is again covered with a piece of plaster moistened with collodion. Then over this first dressing aseptic cotton, dipped in silicate of potassia, is placed and retained by three or four rolls of bandages or pieces of plaster, also impregnated with the silicate.

The hemostatic ligature is then removed, and the animal so secured as to prevent him from rubbing the neck. In ten or twelve days the dressing becomes loose and is detached, leaving a simple, healthy, granulating surface.—*Ibid.*

PUTRID ABSCESS OF THE ABDOMEN FOLLOWING OVARIOTOMY IN THE MARE.

By Delamotte and Charon.

A mare upon which this operation had been performed without previous disinfection of the vagina, was attacked by high fever and colics, a few days subsequently. Her condition assumed a serious aspect, and fears of septic peritonitis were entertained. By careful attention, however, this was avoided, but an enormous abscess followed, situated in the pelvic cavity, between the walls of the vagina and the peritoneal coat. This abscess, however, fortunately emptied itself into the vagina and the animal recovered after a long convalescence.

This case once more indicates the value of antiseptic measures and the necessity of their persistent and habitual employment in veterinary surgery.—*Revue Veterinaire.*

GANGRENOUS SEPTICÆMIA FOLLOWING SUB-CUTANEOUS INJECTION OF MORPHINE.

By M. Delamotte.

A vicious mare was ovariotomized, while already suffering with an extensive wound of the left elbow, and to keep her under control several hypodermic injections of chlorhydrate of morphine were administered. She did not seem to suffer from the operation, but died a few days afterwards with generalized septic infection, which first exhibited itself on the neck, at the place where one of the injections had been made. —*Journ. de Med. Vet. et Zoot.*

INTESTINAL FISTULA FOLLOWING EXOMPHALUS.

By M. Pardon.

An eight-month mule was treated for an umbilical hernia, with a friction of ointment of bichromate of potassa. On three different occasions, with intervals of four months between, the applications were renewed, the hernia having undergone no change. After the last application a large abscess appeared, and ulcerated in four places, through which the contents of the intestines and the pus escaped together. Under the cautery, both actual and potential, applied over the walls of the phlegmon, the discharge from the fistula ceased, the hernia disappeared, and the animal recovered after a treatment of forty days.

This case tends to show that intestinal fistulas of this nature are not always quite so serious as they may have appeared to be.—*Revue Veter.*

PROPHYLAXY OF RABIES.

By Professor Piana.

The author proposes castration of all males as one of the best means of prophylaxy of rabies. It is not proposed because castration can be supposed to impart immunity against the rabic virus, but because of the effect which the operation would produce upon the habits of the animal—the castrated dog becoming more sedate and tractable, less desirous to leave his home after the female, and so becoming better tempered and more domesticated.—*Il Moderno Zooiatro.*

GLANDERS IN A CAT.

By M. Lissigin.

The author concludes from his researches:

1st. That the cat, without reference to sex or age, is very susceptible to the infection of glanders.

2d. The period of incubation continues about three days. At first the temperature rises to 40° and then falls somewhat, and on the third day there appears at the point of inoculation a tumor, quite large, which soon ulcerates and changes to a glanderous chancre.

3d. The virus of the glanders of cats, and its cultures, are very virulent for other cats, which it kills rapidly.

4th. The inoculation of cats with equine virus produces a form of disease very characteristic.

5th. The inoculation of the cat with pathological products suspected of being glanders gives good results. The inoculated spot not only becomes the seat of glanderous ulceration, but metastatic abscesses soon appear all over the body, and death takes place between the eleventh and the twenty-second day, the animal losing flesh largely meanwhile. At the post-mortem the lungs and spleen are found to be full of glanderous tubercles, and the septum nasi is covered with extensive chancres.—*Giornale di Vet. Mil.*

TWO CASES OF CHRONIC HYDROCEPHALIA CURED BY PILOCARPINE.

By M. R. Raia.

The first case is that of a horse which some weeks previously had shown symptoms of cerebral congestion, and which after a few days' treatment had returned to his work, but when sick again showed all the symptoms of chronic hydrocephalia. He received subcutaneous injections of chlorhydrate of pilocarpine, the first of seventy, the second of eighty, and then successively four more of eighty centigrammes each. The head was kept covered with a bag filled with ice. After the second injection the symptoms seemed to improve, and this improvement continued until recovery, which occurred after a few days' treatment. In the second case the animal received for the first injection sixty-five centigrammes, a second of seventy, and a third of seventy-five. Local treatment of the head consisted in ice applications.—*Ibid.*

STERNAL PERIOSTITIS AND CONSECUTIVE PERICARDITIS.

By M. Lari.

A ten-year-old mare showed a tumor as large as a man's head in the sternal region between the fore legs. It was painless, but interfered with the motion of the animal. It was supposed to have originated in a seton which had been applied two years previously. The animal was destroyed. At the post-mortem examination extensive periostitis of the sternum was discovered, the tumor involving the two posterior thirds of the cartilage. It was formed of lardaceous tissue, mixed deeply with ossified spots. The inflammation of the bony structure had extended to the pericardium, as shown by a thick, false membrane covering its surface.—*L. Ercolani.*

GERMAN EXTRACTS.

Translated by RICHARD MIDDLETON, D.V.S.

REPLACEMENT OF PROLAPSED UTERUS.

Many times in my career as a novice have I had great difficulty in replacing an inverted uterus, and still more in retaining it within the body after once adjusting it in the physiological position. The purchase of bandages for the replacement pre-supposes considerable outlay. Hypodermic injection of morphine has proved with me more practicable and cheaper.

As soon as I am called to a case of prolapsus uteri, I immediately inject the following solution:

℞ Morphin. Sulph., gr. viii,
Aquæ Distill., ʒ ij,
M.

If the organ has not been cleansed I order the same to be done with a tepid carbolic solution; this removes all foreign and infectious bodies, and at the same time stimulates circulation.

The uterus is now placed upon a clean cloth and supported by assistants; in this position it is retropelled by placing the closed hand upon the fundus and pressing forward. Should this prove a slow method, the mucous membrane, and to a small extent the submucous tissue, is scarified. When the organ is once within the body and in its normal position, some one should retain it there until it assumes the temperature of the surrounding parts—which may consume half an hour. This being accomplished, the lips of the vulva are brought in juxtaposition by carbolized silk sutures, an aperture being allowed to remain open for the escape of urine. The animal is placed in a position favorable to the retention, to wit, the posterior portion of the body is elevated for two days. In case the expulsive efforts subsequently recommence, doses of alcohol and coffee should be administered. After ten to fourteen days the stitches are removed, and the animal discharged as sound.—*Berl. Thier. Woch.*

IMMUNITY AGAINST THE VIRUS OF PUS.

R—— has experimentally confirmed the assertion that animals having successfully withstood peritonitis possessed, to a certain extent, immunity from infection of the abdominal cavity. He proved that dogs were able to stand large quantities of staphylococcus pyogenes aureus when the injections were consequently increased from a minute quantity. These animals were also accustomed to large doses of pus by first receiving large doses of the ptomain. This confirms the view of Briegers that the toxic quality of pus is referable to the ptomain. This discovery has the practical worth of demonstrating that in researches upon pus, the same animal must not be used for a number of experiments.—*Wochenschrift.*

COLLEGE COMMENCEMENTS.

AMERICAN VETERINARY COLLEGE.

The commencement exercises of this institution were held on Thursday, March 17, at Chickering Hall, before a crowded assemblage of the friends of the Alumni and of the college.

The divine blessing was invoked by Rev. Dr. T. R. Morse, and the degrees were conferred on the graduating class by President F. D. Weisse, M.D., the names of the following forty-seven new graduates being successively announced by Prof. A. Liautard, M.D., V.M., the dean of the faculty :

LIST OF GRADUATES.

Harry Webster Acheson, Washington, D. C.; James Edgar Assing, New York, N. Y.; Ulysses S. Grant Bieber, Kutztown, Pa.; Wendel Valentine Bieser, New York, N. Y.; Charles Richard Borden, Taunton, Mass.; Thomas Earle Budd, Woodbury, N. J.; John Campbell, New York, N. Y.; Carlisle Norwood Darke, Güttenberg, N. J.; Robert Dickson, New York, N. Y.; William Henry Dodge, Leominster, Mass.; Bruce Linwood Drummond, Woodbridge, N. J.; Charles Frank Dwinal, Mechanic Falls, Me.; Andrew Young Earl, Honeoye Falls, N. Y.; John Thomas Ferley, Jr., Philadelphia, Pa.; Charles Hugo Ford, Moorefield, W. Va.; Jacob Homer Gardner, New York, N. Y.; James Alfred Haas, Lyon Valley, Pa.; Arthur Julius Hammerstein, St. Louis, Mo.; Horace Albert Hedrick, Cockeysville, Md.; Michael F. Hoar, Springfield, Mass.; Joseph Rhodes Hodgson, Jr., Brooklyn, N. Y.; James Henry Honan, Delphi, Ind.; George Washington Hood, New York, N. Y.; John Bogert Hopper, Ridgewood, N. J.; Abel Sackville Richard Jones, New York, N. Y.; Theodore Aloysius Keller, New York, N. Y.; William Bennett Kelley, Holtsville, L. I.; Bernard Paul Kenny, New York, N. Y.; William Arminius Koke, Brooklyn, N. Y.; John Eugene Kramer, San Antonio, Tex.; Louis Henry Kraus, New Haven, Conn.; Horace Deland Lambert, Salem, Mass.; John Stilwell Lamkin, Loveland, Col.; Frank Kirk Nice, Germantown, Pa.; William Arthur Nickel, Brooklyn, N. Y.; Frederick Adrien Nief, Paris, France; William Lawrence Nunan, Coriz, Pa.; Adam Wilson Ormiston, Germantown, Pa.; José Maria Peralta, Cartago, C. A.; Charles Wyman Shaw, Kingston, Mass.; Thomas Whaley Shaw, Worcester, Mass.; Albert James Sheldon, Naugatuck, Conn.; Edward Jacob Shipsey, New York, N. Y.; De Witt Clinton Smith, Greensburg, Ind.; John David Sturm, Dana, Ind.; William Rogers Tatum, Glenelg, Md.; William Franklin Woolston, Victor, N. Y.

Professor C. Doremus in his usual happy manner then awarded the following prizes to the successful competitors:

The trustees' prize for the best general examination to William A. Koke, D.V.S.

The faculty prize for the best practical examination before a committee composed of members of the Alumni Association jointly with the practitioners of the city, to Frederick A. Nief, D.V.S.

The Almuni prize for the second best general examination to Albert J. Sheldon, D.V.S.

Together with honorable mention of Adam W. Ormiston in connection with the prize.

There was no anatomy prize in the senior class, but the junior class prize was gained by Mr. G. Ferguson, for the best examination in junior anatomy.

The prize of the college class association was awarded to Edward J. Shipsey, D.V.S.

The valedictorian of the occasion was Albert J. Sheldon, D.V.S.

Rev. Dr. R. Terry addressed the newly graduated veterinarians, in an eloquent speech, full of valuable suggestions and appropriate allusions, fitly and impressively conveyed, and forming a most acceptable didactic and oratorical treat.

The incidents of the evening were of the pleasantest kind. The stage was converted into a flowery parterre, and to the perfume of the flowers were added the beautiful harmonies of Cappa's Seventh Regiment band, and smiling faces and congratulatory salutations gave brightness and pleasure to the scene. Even the March bluster, of which there has been overmuch, was tempered to a brief calm, and taking it for all in all, the graduates of the class of 1891-2 cannot but feel satisfied upon a review of the experiences of their last day of college life, and their enrollment in the ranks of the best friends of the horse and his companions in their service of man.

NEW YORK COLLEGE OF VETERINARY SURGEONS.

At the last commencement of this institution, held on the 18th of March, the following gentlemen were presented with their diplomas and with them the degree of V.S. (Veterinary Surgeon):

P. J. Bryan, Brooklyn, N. Y.; G. W. Browning, Lincoln, Ill.; R. J. Church, Grand Forks, North Dakota; A. K. Davidheiser, Pottstown, Pa.; Van C. Dull, Phillipsburg, N. J.; Henry Dutcher, U. S. A., West Point, N. Y.: H. W. Eliot, New Haven, Conn.; V. H. Gibson, Upper Sandusky, O.; D. W. Gilbert, South Salem, N. Y.; S. A. Honeywell, Cleveland, O.; Walter Johnson, More, Pa.; Ferdinand Hueppe, Berlin, Germany; S. B. McDougall, Grove City, Pa.; Wm. McLoughlin, New York City; John McTammany, Brooklyn, N. Y.; John P. Matthews, Lambertville, Pa.; Enos S. Moyer, Hillstown, Bucks Co., Pa.; A. Peschmanns, Lakegrove, L. I.; Hervey T. Potter, New Haven, Conn.; Benj. Schmidt, New Bremen, O.; Stanley Smith, Columbia, Mo.; Charles Seay, Frankfort, Ky.; Chas. Seilmann, New York City; William Swan, New York City; Eli Straus, New York City; Harrison F. West, New York City; Walter Howard Wilson, Philadelphia, Pa.; Fred Winters, White Lake, N. Y.; Harry S. Willis, Rapidan, Va.

CHICAGO VETERINARY COLLEGE.

At the commencement exercises of this institution, held on the 24th of March at Hooley's Theatre, Chicago, the following seventy gentlemen received the degree of D.V.S.:

C. H. Anthony, W. S. Arbuthnot, J. G. Atchison, C. H. Bagnall, B. Baldwin, F. H. Barr, D. E. Baughman, S. H. Bauman, J. H. Beadle, A. E. Behnke, G. Brauchle, F. Briggs, F. F. Brown, M. H. Browning, L. Campbell, E. N. Chute, J. B. Clancy, W. S. Clark, P. D. Coffey, T. D. Collins, G. D. Crossan, W. H. Curtiss, D. G. Davison, J. P. Denby, C. O. Donaldson, Geo. C. Eckley, F. H. Farmer, Jas. G. Fish, W. R. French, V. E. Frizzell, W. W. Giles, T. E. A. Giller, R. H. Greer, W. C. Hanawalt, J. W. Haxby, J. Henderson, E. Herring, B. O. Johnson, C. H. Johnson, P. Justice, J. L. Kearney, D. O. Knisely, L. L. Knoble, A. H. Kyle, M. F. Leffingwell, E. P. Leresche, W. B. Lewin, E. J. List, E. G. Marten, C. B. McClelland, S. McCluer, E. J. McLeod, R. H. McMullen, Emil Mueller, S. E. St. John Paulet, J. S. Potter, J. Robards,

J. Robertson, C. Schmitt, J. J. Schmitz, H. E. Sherman, T. F. Stanton, F. Tefft, G. E. Uehren, J. T. Unertl, E. J. Walter, W. H. Welch, M. B. Whitcomb, W. S. Winget, A. Youngberg.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

Regular meeting of the Massachusetts Veterinary Association held at 19 Boylston Place, Boston, Wednesday evening, February 24th, at 7:30 o'clock. President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Bunker, Becket, Emerson, Hadcock, Howard, Osgood, Winchester, Winslow, Parker and the Secretary. Honorary member: Dr. Stickney. Visitors: Drs. W. L. LaBaw and F. B Carlton; also Messrs. G. Sawyer, Geo. Quinlan and Murch, senior students at the Harvard Veterinary School.

Records of the last meeting read and accepted.

Dr. Winchester reported the result of the meeting of the Comitia Minora of the United States Veterinary Medical Association in New York recently, and that it was decided to hold the annual meeting of the Association in Boston on the third Tuesday, Wednesday and Thursday in September.

Motion made by Dr. Blackwood and seconded by Dr. Bunker, that the report be accepted, and a vote of thanks be extended the committee. Carried.

Dr. Bryden, chairman of the committee to write to the Governor regarding the Cattle Commission, reported for his committee.

Motion made by Dr. Winchester and seconded by Dr. Blackwood, that the report be accepted and a vote of thanks be given the committee. Carried.

Motion made by Dr. Bunker and seconded by Dr. Black wood, that the committee's report be put upon the records of this Association. Carried.

The report is as follows:

BOSTON, MASS., Jan. 27th, 1892.

To his Excellency, William E. Russell, Governor of the State of Massachusetts:

SIR: We, a committee appointed by the Massachusetts Veterinary Association for the purpose, Jan. 27, 1892, desire to represent to Your Excellency that in the opinion of the representative body of the profession in this State, that any important question relating to the contagious diseases of animals should properly be referred in its finality to a member, or members, of our profession for decision.

It desires to make no suggestion as to how this result shall be accomplished, but simply to state that in its opinion all questions relating to contagious diseases of animals bear the same relation to the veterinary profession that contagious diseases of the human subject bear to the medical profession.

WILLIAMSON BRYDEN, V.S.,
FREDERICK H. OSGOOD, M.R.C.V.S.,
LESTER H. HOWARD, D.V.S.,
Committee.

The following was received in reply:

COMMONWEALTH OF MASSACHUSETTS,
EXECUTIVE DEPARTMENT,
BOSTON, Jan. 29th, 1892.

Mr. Williamson Bryden, 36 *Sudbury St., Boston, Mass.:*

MY DEAR SIR: I have received the opinion of your committee, submitting the action of the Massachusetts Veterinary Association in reference to the necessity of having skilled and professional opinion upon questions relating to contagious diseases of animals.

I fully agree with the views of your Association, and shall endeavor, as far as is in my power, to carry out those views.

Very truly yours, WM. E. RUSSELL.

James B. Paige, D.V.S. (Mont.), Professor of Veterinary Science at the Massachusetts Agricultural College, Amherst, was voted upon for membership. Twelve ballots were cast, all in the affirmative, and Dr. Paige was accordingly elected.

Applications for membership were received from Drs. W. L. LaBaw and F. B. Carlton.

Dr. Winchester proposed that we take some action now towards arranging a programme for the meeting of the United States Veterinary Medical Association here next September, and thought a committee of arrangements should at once be appointed to make hotel and railroad rates.

Dr. Bunker approved Dr. Winchester's remarks, and moved that a committee of five be appointed, including the President and Secretary of this Association, to find out and report at our next meeting what arrangements can be made for the entertainment of the United States Association as regards hotels, railroads and all other matters relating to the same. Seconded by Dr. Osgood.

Dr. Bryden agreed with Dr. Winchester's ideas.

Motion carried.

The Chair appointed Drs. Winchester, Bunker and J. S. Saunders on the committee, with the President and Secretary members *ex officio*.

Dr. Bryden then read a paper upon "Navicular Disease," after which a discussion followed, taken part in by the members present.

Dr. Osgood, recently appointed Professor of Veterinary Surgery at the Harvard Veterinary School, announced that he had taken entire charge of the Harvard Veterinary Hospital, and was ready to extend any courtesy to the Association, and would be happy to receive the co-operation of its members.

Dr. Bunker promised a paper for the March meeting.

Motion made by Dr. Bunker, seconded by Dr. Blackwood, that a vote of thanks be given Dr. Bryden for his paper. Carried.

Motion was made by Dr. Winchester, seconded by Dr. Emerson, that hereafter the senior students at the Harvard Veterinary School be invited to the meetings of this Association. Carried.

The meeting then adjourned.

AUSTIN PETERS, *Secretary.*

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Pennsylvania State Veterinary Medical Association was held in the hall of the College of

Physicians, Thirteenth and Locust Streets, Philadelphia, W. S. Kooker, presiding. Veterinarians from all parts of the State were present, and the meeting was the most successful in the history of the Association, this being the first time the University of Pennsylvania has taken a prominent part.

The sessions began at 10 o'clock, when the following officers were elected; President, Dr. Horace Hoskins; Vice-Presidents, Dr. Thomas B. Raynor, Dr. R. G. Webster, Dr. Zeno S. Keil; Recording Secretary, Dr. Robert Gladfelter; Corresponding Secretary, Dr. W. H. Ridge; Treasurer, Dr. John R. Hart; Trustees, Dr. W. S. Kooker, Dr. W. L. Zuill, Dr. S. J. J. Harger, Dr. James B. Raynor and Dr. J. Curtis Michener. Dr. R. S. Huidekoper was made an honorary member, and several new members were admitted.

Several committee reports were presented, the most important of which was that of the Committee on Sanitary Science and Police, read by Dr. W. L. Zuill. He gave a description and explanation of the investigations into tuberculosis in cattle, and the effect of tuberclin and preatine in the cure of the disease. The appointment of milk and meat inspectors in this city was also referred to.

The members was entertained at lunch at Boothby's by the University Veterinary Faculty, and at the afternoon session Dr. S. J. J. Harger read an interesting paper on "Laryngotomy," dwelling on the details of the cure for "roaring," so familiar in horses. The disease, the doctor said, was common among trotting and running horses, and Ormonde, the famous English sire, was a victim. Dr. Harger's paper was discussed by the members, who differed as to the merits of the operation and its usefulness for ordinary practitioners.

Dr. Alexander Glass read a paper by Dr. James A. Waugh, of Pittsburg, on "The Veterinarian—Intellectually, Socially and Morally." The paper treated of a number of interesting points, and was earnest in its antagonism to "mushroom" veterinary schools, run for profit, and having no scientific course of instruction.

Dr. W. H. Ridge presented a criticism upon several cases previously reported, and after it had been discussed the Treasurer's report was read, showing a balance of $47.64. The new President made an appropriate speech, and after deciding to hold the semi-annual meeting at Allentown the convention adjourned.

In the evening the Keystone Veterinary Society of this city met, and John S. McKinlay made an address upon "Veterinary Jurisprudence," with special reference to the Law of Warrantee.

CALIFORNIA STATE MEDICAL VETERINARY ASSOCIATION.

The quarterly meeting of the California State Medical Veterinary Association was held at the Baldwin Hotel, Vice-President W. F. Eagan presiding in the absence of President W. E. D. Morrison, of Los Angeles.

The Chairman announced that the following gentlemen are now members of the Association, and in good standing: Thomas Maclay, Petaluma; A. M. McCallum, Sacramento; H. A. Spencer, San Jose; R. T. Whittlesey, Los Angeles; J. Blackington, Los Angeles; Ward B. Rowland, Pasedena; E. E. Pierce, Oakland; W. J. Oliver, Los Angeles; C. Masoero, San Francisco; W. E. Wadams, Santa Clara; C. B. Orvis, Stockton; P. C. Davenport, Santa Rosa; P. P. Parent, Ukiah; Peter Burns, San Francisco; H. F. Spencer, San Jose; R. A. Archibald, Sacramento; D. F. Fox, Salinas, and W. Davidson, San Bernardino.

A letter was received from Mrs. W. H. Woodruff, thanking the Society for sympathy and financial help rendered to her on the occasion of the death of her late husband. There being no papers to be read, a general discussion on subjects of interest to the veterinary profession took place.

The most important topic of the evening was that of the prevalence of glanders in this State. Dr. Maclay, of Petaluma, in a comprehensive address, strongly advocated the necessity of immediate legislation on this and other veterinary subjects. "At present," said he, "if I find a case of glanders and direct the owner of the animal to destroy it, he may or may not regard my instructions. Now there should be a law rendering it imperative that all animals suffering from this terrible and incurable disorder should be immediately destroyed and the stables and buildings thoroughly disinfected, and an infected area declared of at least a quarter of a mile around where the disease has manifested itself. Until such a law is passed the Board of Supervisors in each county of the State should pass ordinances to enforce these principles."

Dr. Maclay then described the methods in vogue in Glasgow, Scotland, for dealing with all cases of glanders and other contagious diseases. He commented on the terrible fact of the carcasses of glandered horses being thrown in quantities into the Sacramento River, endangering the lives not only of all animals drinking the water, but the health and lives of untold numbers of our fellow creatures. Many people have died in recent years from the effects of glanderial contagion, and, as, owing to the present lax condition of the law dealing with such diseases, glanders is spreading and likely to increase, the speaker strenuously appealed to the members, the press and the public, to take immediate action to nip the threatened danger of an epidemic in the bud.

Dr. Spencer, of San Jose, then spoke of the work done to eradicate this terrible disease in Santa Clara County. He was appointed to the office of County Veterinarian in 1888, and since then has had some sixty glandered horses destroyed, and believes that the disease is pretty well stamped out, yet it becomes necessary for him to be vigilant at all times, for glandered animals are sometimes turned out on pasture among young stock, and it becomes necessary to destroy them. He says that all farmers and horse-breeders are cognizant of the terrible results of having glanders on his place, consequently they are ever on the alert to apprise him if their suspicions are aroused.

Several of the members said there were many glandered horses in San Francisco, and no steps are taken by the authorities to stamp it out. The number of cattle killed every year suffering with anthrax, and the number of milch cows that have tuberculosis, would astonish the public if it were known. A county veterinarian should be specially employed to protect the public. He should be compelled to make a report every day, and by his vigilance and strict attention to duty, the spread of these infectious and contagious diseases may be checked.

Dr. Maclay again urged upon the members the necessity of having proper sanitary laws passed. Drs. Fox, Burns, McCallum, Orvis, Pierce, Spencer and Egan all testified to the need of proper legislative authority to stamp out the many dreaded diseases of horses, cattle and swine, and testified to the spread of these diseases in the counties of San Joaquin, Santa Barbara, Sacramento, Sonoma, Santa Cruz and Mendocino. It was stated, however, that in those counties where the Supervisors had passed ordinances and appointed county veterinarians the disease had been nearly rooted out, and was far less prevalent than in those counties where no action had been taken by the authorities. The meeting adjourned to the second Wednesday in June.—*Breeder and Sportsman.*

WISCONSIN SOCIETY OF VETERINARY GRADUATES.

The second annual meeting was called to order at the Park Hotel in Madison, March 16th. In the absence of the President, Dr. V. T. Atkinson, whom death had seen fit to call during the past year, the Vice-President, Dr. J. L. Scott, presided. The minutes of the last annual meeting were read and approved.

The officers elected for the ensuing year were as follows: President, J. L. Scott, V.S., Beaver Dam; Vice-President, E. D. Roberts, D.V.S., Janesville; Secretary, G. Ed. Leech, D.V.S., Milwaukee; Treasurer, C. H. Ormond, D.V.S., Milwaukee; Censors, Drs. Roub, White and Kelso.

There were seven new members enrolled also, which shows a good indication of the interest felt in the Society throughout the State.

A lengthy discussion took place concerning the loss of the former President, and the following resolutions were adopted:

Whereas, The Divine Creator has seen fit to call from our ranks our worthy President, Dr. V. S. Atkinson, be it hereby

Resolved, That in the loss of Dr. Atkinson the Society feels keenly this blow, as he was its founder, and one who had not only its interests at heart, but all things tending to elevate the veterinary profession throughout the United States, and it is further

Resolved, That a copy of this resolution be sent to the leading journals, and also recorded in the Secretary's books.

Although this is a new organization there was a lively interest manifested in the welfare of the Society by members present, and there was a hope expressed that all graduates in the State should interest themselves enough in the next meeting, to be held at Madison, on the third Wednesday in August, '92, to be present and help make this one of the best societies in the country.

The following members were appointed to read papers at the next meeting: Dr. Scott, Dr. Wright, Dr. Roberts and Dr. Williams, after which a motion to adjourn was carried.

G. ED. LEECH, *Sec.*

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Illinois State Veterinary Medical Association was held at Peoria, Ills., Feb. 17th, 1892, President S. S. Baker, of Chicago, presiding.

The following members responded to the roll-call: Drs. Jas. Addison, Walter Allen, A. G. Alverson, S. S. Baker, G. Z. Barnes, G. L. Crocker, T. J. Gunning, Jas. McClintock, J. W. Parkinson, S. V. Ramsay, Jno. Scott, N. I. Stringer, H. Thomson, M. Wilson, N. P. Whitmore. J. A. McDonnell, M. D., of Chicago, an honorary member of the Association, was also present.

Minutes of the last meeting were read and approved.

Art. II., Sec. 3 of the by-laws, as revised at last meeting was adopted.

The following gentlemen were proposed for membership: Drs. Clarence Mills (Chic. '90), Mt. Palatine; Geo. Ditewig (Chic. '91), Canton; J. H. Malone (Chic. '91), Henry; W. F. Robinson (Chic. '91), Peoria; C. H. Hartman (Am. '90), Peoria.

On motion by Dr. Stringer, seconded by Dr. Scott, they were unanimously elected by acclamation.

Vice-President S. V. Ramsay taking the chair, Dr. S. S. Baker read his paper on "The Use of Lithium in Veterinary Practice."

A great deal of interest was manifested in the discussion of this paper on account of this drug being a comparatively new remedy in veterinary practice, and by the good results following its use. The various salts of lithium were mentioned, and the citrate chosen as being the one most applicable for veterinary use on account of its being readily dissolved. Its use was advocated in azoturia on account of its having the power of dissolving uric acid, forming a very soluble salt. It is also less irritant to the stomach than the potassium salts generally used, while its diuretic action is the same.

Dr. J. A. McDonnell spoke of the good results following the use of lithium in human medicine, and advocated a more extensive use in veterinary practice.

Adjourned until afternoon.

At the afternoon sessoin, the President called on Dr. Whitmore for his paper on "Azoturia." This paper brought forth a very lengthy discussion, as is usually the case when the subject is mentioned. The use of diuretics in the treatment was thoroughly discussed and favored by many, while others from a theoretical point of view opposed their use on account of the already over-stimulated condition of the kidneys, due to the excess of uric acid, and advocated the use of hot fomentations, the gentle stimulation of other organs, no diuretics, but soothing applications to the irritated kidneys, along with the other general treatment.

A fresh kidney was brought in, and Dr. McDonnell gave a very interesting talk on the histology and physiology of this organ.

The doctor was given a vote of thanks for his endeavors to benefit the Association, for the interest taken in our branch of the profession, and for his earnest work in trying to bring the two branches nearer together.

The President next called on Dr. Crocker for his paper on "Nursing Sick Stock."

Many points were brought out in the discussion relating to the sanitation of the surroundings of our patients, the care necessary in selecting and giving proper food, and to the giving of general directions to be carried out along with medicinal treatment.

Dr. Alverson then read a paper on "Interesting Post-mortems," and was followed by Dr. Jno. Scott on the report of two cases of "Sciatica."

Two of the essayists being unable to attend, the President called for an impromptu programme.

Accounts were given by different members of unusual cases occurring in their practice, the results of certain forms of treatment, and the outcome of rare cases.

A motion by Dr. Stringer, seconded by Dr. Thomas, was made to have the chair appoint a committee, consisting of members from different parts of the State, to make out a "fee bill," and report at next meeting.

After a good deal of discussion regarding the practicability of this plan, the motion was carried and the following committee appointed: Drs. Nattress, Ramsay, Scott, Gunning, Wilson, Allen, Alverson, Thomson, Whitmore and Addison.

Bills to the amount of $19.23 for postage, stationery, programmes, etc., were audited and ordered paid.

The Treasurer's report showed a balance of $33.32 on hand.

A vote of thanks was given the proprietors of the hotel.

The meeting adjourned to meet in Chicago in November at the call of the committee.

MATTHEW WILSON, M.R.C.V.S.,
Recording Secretary.

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION.

A special meeting of the Maryland State Veterinary Medical Association was held on February 5th, 1892, at its rooms, corner Madison Avenue and Orchard Street, Baltimore, with Dr. Geo. C. Faville, President pro. tem. in the chair.

There were present Drs. Geo. C. Faville, Wm. Dougherty, T. F. Barron, A. W. Clement, D. R. Hoffman and H. A. Meisner.

The minutes of the previous meeting were read and approved.

The Ambulance Committee reported that they had conferred with Mr. Duvall, the Secretary of the Society for the Prevention of Cruelty to Animals, who informed them that an ambulance and harness could be procured for $500; also that he thought arrangements could be made with the Adams Express Company for furnishing horses, etc.

Under new business Dr. Dougherty moved that our Secretary report the meetings of this Association in the Baltimore daily papers. Carried.

The proposal of new members being next in order, Dr. Hoffman proposed the name of Dr. G. Allen Jahrman, of Chestertown, Md., whose name was referred to the Board of Censors, to be reported upon at next meeting

Dr. Dougherty delivered an excellent address upon a new form of treatment for chronic shoulder and hip lameness, citing some four or five cases thereof which had been successfully treated.

Adjourned.

The regular monthly and sixth annual meeting of the Maryland State Veterinary Medical Association was called to order at Tierney's Hotel, 205 N. Calvert Street, Baltimore, at 8 P.M. February 18th, 1892, with the President, Dr. W. H. Martenet, in the chair.

The following members responded to roll call: Drs. W. H. Martenet, Wm. Dougherty, Geo. C. Faville, A. W. Clement, T. F. Barron, D. R. Hoffman and H. A. Meisner.

The minutes of the previous meeting were read and approved.

Report of Secretary and Treasurer was read and approved.

Motion was made and carried that Dr. Wm. Dougherty be placed on the Ambulance Committee, which now consists of Drs. A. W. Clement, D. R. Hoffman and Wm. Dougherty.

Dr. Clement withdrew his amendment to Article III., Section 2, and Dr. Geo. Faville made a motion that graduates of the "Veterinary Department of the Baltimore University" be not eligible to membership of this Society. Carried.

Dr. W. H. Martenet then presented an amendment to Article I. of By-Laws, which read as follows: "The meetings of this Society shall be held on the third Thursday of each month." Adopted.

The Board of Censors reported favorably on Dr. Jahrman, and moved that he be accepted as an active member. Carried.

Dr. Geo. C. Faville was appointed essayist for next meeting.

The election of officers resulted as follows: President, Dr. W. H. Martenet; Vice-President, Dr. Geo. C. Faville; Secretary and Treasurer, Dr. H. A. Meisner; Board of Censors, Drs. Wm. Dougherty, T. F. Barron, A. W. Clement, D. R. Hoffman.

Meeting then adjourned to retire to the bauquet hall, where the members and a number of invited guests did justice to the bountiful repast which awaited them.

Thus ended the most enjoyable meeting this Society has ever held. H. A. MEISNER, V.M.D., *Secretary.*

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The following appointments have been made:

Committee of Arrangements for the Annual Meeting at Boston, 1892: W. H. Hoskins, 12 South 37th Street, Philadelphia, Pa.; J. F. Winchester, Lawrence, Mass.; L. H. Howard, Boston, Mass.

Committee of Arrangements for the Annual and International Meeting at Chicago, 1893: R. S. Huidekoper, M.D., Veterinarian (Alfort), President, 311 West 59th Street, N. Y.; W. L. Williams, V.S., Vice-President, Purdue University, Lafayette, Ind.; W. H. Hoskins, D.V.S., Secretary, 12 South 37th Street, Philadelphia, Pa.; D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, D. C.; A. Liautard, M.D., V.M., American Veterinary College, New York; A. H.

Baker, V.S., Chicago Veterinary College, Chicago; Olof Schwarzkopf, V.M.D., University of Minnesota, Veterinary Department, Minneapolis, Minnesota; J. H. Stickney, M.R.C.V.S., Boston, Mass.; A. W. Clement, V.S., Johns Hopkins University, Baltimore, Md.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The fifteenth annual meeting was held in the lecture-room of the college on March 24th, 1892. On roll-call twenty-two graduates of previous years, from different States, responded to their names, and after the admission to membership of the new graduates, thirty-four of them answered to their names, making a total attendance of fifty-six.

The President, Dr. Hoskins, delivered a very interesting address.

The report of the Treasurer showed the Association in better financial condition than in previous years.

A few interesting communications were received from some of the State Secretaries.

The Alumni Trustees reported progress in the efforts to secure a new college building.

Resolutions on the death of Drs. G. Bridges, Frederick Hanshew and J. McGrath were read, and ordered in the minute book.

The election of officers resulted as follows: President, J. E. Ryder, D.V.S.; Vice-President, H. D. Hanson, D.V.S.; Secretary, E. B. Ackerman, D.V.S.; Treasurer, A. J. Dodin, D.V.S.; Librarian, E. J. Nesbitt, D.V.S.

After commencement exercises, a sumptuous dinner at Clark's was enjoyed by the members of the Association, with several members of the Faculty and invited guests. "A royal good time was had; it was the most enjoyable and profitable dinner ever partaken of by the Association. Let another year bring more of the members together. Remember that nothing succeeds like success, and that we do not want to go back of this meeting."

E. B. ACKERMAN, D.V.S., *Secretary.*

CORRESPONDENCE.

PLEURO-PNEUMONIA IN THE UNITED STATES.

Editor of American Veterinary Review:

DEAR SIR,—In your editorial comments in the February REVIEW on the work of the Bureau of Animal Industry, referring to pleuro-pneumonia, you say it is quite certain that this disease can be considered as almost eradicated from the United States, if indeed that object has not already been accomplished. If this is so, all must admit that the Bureau has succeeded in a very difficult task; in fact, one without a parallel. But this conclusion is, in my opinion, premature.

With your permission I will make the following quotation from your editorial, viz.: "The report of the Secretary of Agriculture, issued October 27, 1891, contains some interesting reading." I agree with you as to the nature of the Secretary's report; in the face of more recent developments, it is highly interesting. I find in said report, on page 16, referring to the Deptford oxen (the circumstances of which case I presume the veterinary profession is familiar with), the following statement:

"Thanks to our system of identification, these two cases were traced in the manner I have indicated, and in every particular their life history sustained the diagnosis of our inspectors [which was sporadic pleuro-pneumonia], which was, I should say, supported by many leading veterinarians in Great Britain at the time. More recently, I am pleased to say, confirmation of our position in their cases, furnishing a triumphant vindication of our American inspectors, has been offered through the columns of a leading veterinary journal in Great Britain by the man who stands beyond dispute at the head of the veterinary profession in that country."

To make the Secretary's report a little more interesting reading, and the vindication of the inspectors more triumphant, allow me to quote from an article in the *Journal of Comparative Pathology and Therapeutics* for December, 1891, page 333, by J. McFadyean, M.B., B. Cs., F.R.S.E., Royal Veterinary College, Edinburgh, a bovine pathologist second to none on pleuro-pneumonia, to whom, along with Professor Whalley, fresh specimens of the lungs of said oxen were submitted for inspection, and who at once pronounced the lesions to be those of contagious pleuro-pneumonia.

After having submitted the sections of the lungs of Deptford oxen to the scrutiny of the members of the Lancashire Veterinary Medical Association, and receiving a unanimous verdict that the specimens exhibited were those of bovine contagious pleuro-pneumonia, Prof. McFadyean concludes with the following:

"But there remains to be mentioned additional evidence of great weight in support of the opinion that the Deptford ox was the subject of pleuro-pneumonia. On the occasion of a visit to the Continent during the past summer, I personally submitted portions of the lungs of this animal to Professors Bangs (Copenhagen), Schutz (Berlin), Johne (Dresden), Csokor (Vienna), Kitt (Munich), and Lupke (Stuttgart), and each of these distinguished pathologists without hesitation declared that the lesions present were those of contagious pleuro-pneumonia (lungenseuche)."

In face of the above facts you and every impartial critic must agree with me in failing to find where the triumphant vindication comes in. My object in thus placing these facts before the readers of the REVIEW is that the veterinary profession, who doubtless are interested, may compare notes and draw their own conclusions.

Yours truly, L. McLEAN, M.R.C.V.S.

NAVICULAR DISEASE.

DEAR SIR.—In the January number of the REVIEW you published a paper read before the Massachusetts Veterinary Association, by W. Bryden, V.S., in regard to which I wish to say a few words.

I have myself quite frequently noticed an apparent sympathetic sensitiveness of some part of the leg when the parts within the horny box were becoming diseased. For example, in the incipient stages and progress of navicular lameness, and sometimes of corns, there has been a hypersensitive condition of the superior sesamoid ligament, most marked below its bifurcation and just above the fetlock joint. At other times the region of the scapulo-humeral articulation has been affected in a similar manner. That the most frequent causes of navicular lameness are abnormal conditions of the horny box is a fact of the truth of which I am thoroughly satisfied. That in its early stages it yields to proper treatment I have demonstrated also, to my entire satisfaction. Even in well advanced cases, after complete anchylosis of the pertorans tendon with the navicular bone, the lameness can be modified to a remarkable degree.

While I am not prepared to accept all that the author claims, still the subject is well worthy of our close attention.

JOHN HAMLIN,
459 C. Street, Washington, D. C.

A YEARLING BULL COMMITS SODOMY WITH A MAN.

Editor American Veterinary Review:

I find on page 106, Vol. XV., No. 2, of the REVIEW a case reported of the vagina of a cow being perforated by a bull during cohabitation. This seemed strange to me, as it is not in accordance with the laws of nature. However, the following perhaps is unparalleled in history:

About two weeks ago a Mr. Platt, thirty-five years of age, living four miles northwest of Allegan, Allegan Tp. Allegan Co., Michigan, while in his barnyard dropped his trousers for the purpose of stooling, a bull standing near by. As Mr. Platt bent forward in the act of rising the bull leaped upon him, covering him as he would a cow, the bull's penis entering the man's rectum, penetrating the bowels for about eighteen inches.

Mr. Platt lived four days, dying in terrible agony.

While this may seem incredible to many, nevertheless it is true, and can be vouched for by many, among whom are Mr. Frank Pound and Mr. B. Peabody, of Allegan, Mich.

Yours truly, L. L. CONKEY.

FOR SALE.

Good practice in city of 45,000 (forty-five thousand) inhabitants, with some country practice. Good climate.

J. POE, V.S., Knoxville, Tenn.

AMERICAN VETERINARY REVIEW,

MAY, 1892.

EDITORIAL.

REPORTS OF AGRICULTURAL BODIES AND EXPERIMENT STATIONS.—The time has arrived, and indeed is nearly past, for the rendition and publication of the annual reports of the various commissions and other official bodies appointed by the different States for the investigation of agricultural and kindred subjects, and we ought soon to be able, therefore, to estimate fairly the condition of health and soundness of the domestic animals which form so large a portion of the wealth of the country.

Considering the sources of these reports, and the facilities of the various Agricultural Boards, the officers of Experimenting Stations, and State Superintendents and other official bodies and persons, for securing accurate and reliable information, and availing themselves of the best accessible aids, the stock-breeders, the veterinarians, the agriculturists, and all who are in any manner interested in the use or consumption of live stock—and this excludes, if any, only an exceedingly small fraction of the community—will be themselves in fault if they fail to become fully informed upon all the essential points of the science, the history, the economy, the management, and the magnitude of the great interests involved in the live stock business, and its bearing upon the welfare of the country, and, in a special sense, upon the health of the people.

All these reports, and with them the monthly bulletins which are issued by some of the Boards of Health, are doubtless read, if not studied, by veterinarians generally, and especially by those among us who are in the habit of giving the subject of sanitary medicine a prominent place in our studies and observations; and certainly the State Veterinarians and the officers of the Bureau of Animal Industry should be counted among this number.

Among the reports which we have recently received are two which have specially attracted our attention. One of these is from Connecticut, and the other from Maine. The Connecticut report gives us the assurance that the past season has been one of general healthfulness, and that no disease commonly accounted contagious has to any considerable extent prevailed within her borders.

The report from Maine, although it closes by affirming that "upon the whole the condition of freedom from disease has been most gratifying," devotes the greater part ot its space to the consideration of tuberculosis, and the justification of the quarantine measures which have been established against the importation of cattle from Massachusetts.

A careful perusal of this report leaves a very favorable impression of the course of the Commissioners, and indicates the performance of a great deal of careful work and a full appreciation of the importance of the duty devolving upon them, and of the necessity of establishing their position by the citation of facts such as would clearly sanction and substantiate their action.

The figures presented by the Commission in proof of the invasion of their State by tuberculous subjects from Massachusetts are of great force and value, though probably not very pleasant reading for Massachusetts people. But while the truth is sometimes unpleasant to hear, there are frequently conditions in which there is much to lose and nothing to gain by its postponement or suppression, and the truest rule as to its disclosure is "the sooner the better." And such is now the case in respect to the authorities of Massachusetts.

That the people of that State are becoming awake to the seriousness of the accusations made by the Maine

Commissioners is made fully evident by the following remarks which were contained in the editorial columns of the Boston *Herald of* April 9th :

THE CATTLE COMMISSION.

The indictment which the Cattle Commission of this State has had brought against it by the Cattle Commissioners of the State of Maine is one which must lead to positive action if a public scandal is to be avoided. If the statements of the Cattle Commissioners of Maine are to be trusted, the members of the Cattle Commission of the State of Massachusetts are thoroughly incompetent and untrustworthy officials. They are allowing contagious pulmonary diseases to extend among the cattle of this State, which not only threaten the health of these animals, but endanger the lives of our people, particularly sick and aged persons and young children—that is, those who are in any way dependent for existence upon a milk diet.

The charges that are made by these presumably responsible persons in Maine are either true or false ; if the former, then the members of the Cattle Commission of this State should be immediately removed ; if the latter, then the members of the Commission owe it to themselves to have the fact clearly demonstrated by competent executive or legislative inquiry. No half-way course is possible.

We may add, that the charges now made have been previously brought forward, though in a less responsible manner ; but, for one reason or another, they have not been examined or answered. If, as most physicians assert, tubercular affections can be transmitted from a diseased animal to a young child by drinking the milk of the former, then it would seem, in view of the great loss of life that occurs in children of three years of age and under, that no preventive measure could be too severe which had for its result the placing of a check upon this needless mortality. We have our milk inspectors, whose duty it is to see that milk sold by milkmen and purchased by the consumers does not have its nutritive qualities reduced by the adulteration of water ; but, if these official statements which come to us from Maine are correct, the water that may be put into milk may be the healthiest part of it.

It seems to us that a *prima facie* case has been made out, which not only justifies, but absolutely imposes upon the State authorities the duty of making an investigation. If the work of the Cattle Commission could be undertaken either by the Board of Health or as a department of the service of the State Board of Agriculture—perhaps, in this case, the former, on account of its special medical character—there is every reason for thinking that the alleged incompetence would give place to scientific thoroughness, and if there are, as is asserted, many hundreds of diseased cattle kept within a few miles of this city, their presence would be found out, and their prompt destruction would prevent the spread of the disease through other cattle and the possible extension of it to human beings.

While we congratulate the Maine Commissioners on Contagious Diseases of Animals as a board, however, we feel that our personal compliments are specially due to our friend Dr. Bailey, who, we believe, has on the present occasion once more shown how fully he has realized the serious nature of the charges he has alleged against the Massachusetts officials; and we are assured that he has neglected none of the proofs necessary to sustain the position he has assumed.

VETERINARY GRADUATES.—The following figures represent the record of the graduation of students at the last commencement exercises of our American veterinary schools: The American Veterinary College contributed 47; the New York College of Veterinary Surgeons 29; the Chicago Veterinary College 70; the Ohio Veterinary College 16; and to these may be added 74 from the Toronto Veterinary College, and some 16 from the Veterinary Department of McGill University, with others still from schools whose college years have not yet expired. There are again, the veterinary departments of various agricultural colleges, and still others of other schools, from which we have received no intelligence. Altogether we make out, hypothetically, 252 new veterinarians as the result of the work of the year, and this number is about *one-eighth* of the entire array of regular veterinarians to be found in this entire country within a comparatively recent period.

A careful consideration of these figures, and a comparison of the success which has attended the establishment of veterinary schools, might furnish a strong argument in favor of the views of those who do not consider the present time as a proper one for a change in their curriculum in some of our schools; but, on our part, we think that no better argument could be devised in favor of the establishment of an American National Board of Examiners, with authority to confer the diploma of "*The Veterinary College of America*," which should be the only recognized certificate of competency to practice in the United States. Having been the first to call the attention of our national organization to the creation of such a Board, and freely devoted our editorial columns to the advocacy of the proposition and enforcement of our reasons for urging the matter upon our brethren, we feel justified, in the presence of the statistics to which we have referred in now suggesting, and with emphasis, that it is a proper time for us to refresh the memories of the officers of the United States Veterinary Medical Association, and to urge upon them that active steps may be taken for the discussion of the subject at the next meeting in Boston.

NOTICE.—Among the reasons by which we have been influenced in our decision to transfer the business management of the REVIEW from our own hands to those of Messrs. Sabiston & Murray, was, among others, that all complaints should be always directed to the same parties. Yet business letters are still sometimes directed to us personally, and although we refer them to our publishers, they sometimes remain unanswered or neglected. Whose is the fault, we do not know. But as of late, and especially at the present time, when some of our subscribers are changing their addresses, some of them leaving college, and some returning home, and for other reasons, errors may take place in the publishing office, and we would once again ask our friends to direct all their communications relating to new subscriptions, or to renewals, or the payment of dues, or to the loss of numbers of the REVIEW, etc., to Sabiston & Murray, 916 Sixth Avenue, New York City, but continue to mail to our own office, 141 West 54th St., all papers and communications designed for publication.

ORIGINAL ARTICLES.

TUBERCULOSIS OF ANIMALS IN ITS RELATION TO HUMAN ALIMENTARY HYGIENE.

BY M. S. ARLOING.*

GENTLEMEN:

At the Congress of 1888 you were invited to consider the question of the prevention of the transmission of tuberculosis from animals to mankind, and the committee of the present

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* A lecture delivered before the Congress for the Study of Tuberculosis, July 27, 1891. Translated from the *Journal of Zootechnic.*

Congress having again introduced as a subject of discussion *the prophylaxy of human and animal tuberculosis*, there will be an obvious propriety in making the *utilization of the flesh of tuberculous animals* the theme of our remarks on the present occasion; for notwithstanding all that has been hitherto said touching the alimentary use of such meats in ordinary conditions, the fact continues to constitute a permanent source of danger, which may only too soon become realized in the tuberculization of numerous human victims.

It may be thought that we are resuming the subject unnecessarily and prematurely, but the result which followed the discussion of the resolutions of the former Congress, before the various bodies to which they were committed, seems almost to impose upon us an obligation to re-enter *de novo* upon a review of certain points of which we then had the honor to ask your acceptance. We do not, however, deny that within a few years a certain amount of progress has been realized. The influence of the various veterinary congresses, and especially of the national gathering of 1886, resulted in the classification of bovine tuberculosis amongst diseases of animals legally designated as contagious, and his Excellency, the Minister of Agriculture, has indicated the cases in which the flesh of animals recognized as tuberculous at the slaughter houses is to be excluded from public use. Through the influence of these deliberative convocations and the recognized authority of the members of the congress, and specially as the effect of the adhesion of physicians, and more than all as the fruit of the agitation maintained by veterinarians, the idea of the noxious quality of the flesh of tuberculous cattle has now largely penetrated the public mind, and the force of the enlightened opinion which has thus become prevalent has also tended to modify the views and moderate the claims of those who decline fully to adopt our conclusions.

But our task is not yet finished, nor can we be warranted in so considering it so long as the practical difficulties which arise from our antagonistic attitude towards tuberculosis remain to be overcome, and the unanimity of opinion which should exist on a point involving so largely both scientific in terest and economic utility, remains unattained. If this desirable unanimity could be established among us, we should probably not have long to wait for such an agreement between the hygienists, with the meat-producing interest and our official agencies, as would end in the adoption of such measures, harmoniously and amicably adjusted, as would effectively reconcile and permanently establish the interests respectively involved, and terminate for good the conflict between the claims of human health for protection and of the agricultural community for assurance of indemnity in cases of equitable need.

It is in this spirit that we desire to speak to this congress, and we shall not consider that our mission has been accomplished until the day when the necessary legal regulations can be carried into effect without detriment to any interest, or remonstrance from any quarter.

We cannot refrain from some expression of our astonishment upon hearing from scientific men avowals of their doubts in respect to the dangers which accompany the use of tuberculous flesh for food. There is but little agreement in their alleged reasons for these doubts, but they may be summarized in such cavilings as these:

1st. That the identity of the nature of human and bovine tuberculosis has not been demonstrated.

2d. That there is doubt touching the virulency of the parts used for inoculation, or at least it is very slight when the connective tissue is used, and almost absent when in the digestive canal.

3d. That ordinary cooking is sufficient to obviate any supposed dangers accompanying the use of the tuberculous flesh.

4th. That even conceding that some danger may survive the process of cooking, the deprivation of the amount of food destroyed, especially when the poorer classes are considered, will be perhaps more injurious to the human race than its free consumption as aliment, with whatever risks may be encountered by thus disposing of it.

5th. That it is consequently useless to impose such a serious loss upon agriculture, and interpose such an embarrassment and loss upon trade by proceeding with such absolute severity against the meat of tuberculous animals.

A. To the first objection we answer that Mr. Chauveau has tuberculized steers by causing them to exhibit all the lesions of human pulmonary phthisis under all its forms, from the granules to the caseous pneumonia, and that it has been impossible for him to distinguish the results from those which he had obtained by the ingestion of bovine tuberculosis. The reciprocal experiment has also been clearly demonstrated by repeated observations, and amongst the most recent I may recall that of E. M. Tscherning, of Copenhagen, published in 1888, and that of Mr. Nocard in 1889, reported to the Academy of Medicine after Pfeiffer.

Mr. Tscherning reports having treated a young veterinarian who received a wound on one of his fingers from a scalpel used in making the post-mortem of a tuberculous cow. Three weeks later, though the wound was healed, the surrounding parts became swollen, and the tumefaction afterwards ulcerated and suppurated. Notwithstanding proper treatment, the local condition became aggravated, surgical interference was required, and a subcutaneous tuberculous mass was removed in which the microscope revealed well-formed tubercles and the characteristic bacilli. The inoculation had no further bad results, and we congratulated ourselves and our colleague on the good result, as well as for the scientific bearing of the fact, the local tuberculization following an accidental inoculation, and thus leaving no doubt as to the origin of the infection. It was evidently a successful implantation of bovine tuberculosis upon man.

Mr. Nocard has reported the case of a veterinarian of Weimar, named Moses, of good health and without hereditary predisposition, who wounded himself in 1887 while making a post-mortem examination of a tuberculous cow. The wound ulcerated and then healed, but an internal tuberculosis was soon manifested and resulted fatally to the patient in 1888. And again, Mr. Ollivier and Mr. Boutet have reported the striking fact of the appearance of six cases of tuberculosis in a school where a tuberculous milch cow was kept.

B. We are told that the virulency of the parts of a tuberculous animal selected for alimentary uses is either quite wanting or very slight in degree when called to act in the connective tissue, and that it may be entirely ignored when its action is to take place in the intestines. This optimistic conclusion rests upon quite too compliant an interpretation of the experimental facts. The quickest and surest way of demonstrating the presence of the tuberculous virus in a suspected fluid or tissue is to employ it in the inoculation of the peritoneum of animals possessing a high degree of susceptibility to the tuberculosis infection. The virulency of the blood and of the muscular juice has been demonstrated by this process in a great number of cases. But inasmuch as success has not been absolutely invariable, certain "reasoners," taking advantage of the negative results, have claimed that tuberculous virus does not exist in microscopic lesions. And again, they willfully exaggerate the proportion of the negative results, and tacitly concede only an insignificant value to the demonstrated facts.

We have with the most scrupulous care and impartiality collected reports of forty-seven experiments designed to ascertain the comparative degrees of virulency possessed by tuberculous animals free from muscular lesions. In all, one hundred and thirty-seven guinea pigs were used in these experiments. Out of these forty-seven recorded cases, nine have given us thirteen positive results. Consequently, from the comparatively small statistical showing the flesh of tuberculous animals has proved itself infecting in one-fifth of the cases, and has tuberculized the inoculated subjects in the proportion of 9.4 per cent. We desire to remark emphatically that these figures are the *minima*. Indeed, it must not be forgotten that the virulent bacilli are irregularly dispersed through the muscular masses; that only a very small fraction of them are used in the inoculation; and again, that only the juice of the muscle is injected; and moreover, that a number of microbes much greater than those extracted in the juice, must remain in the pulp of the tissue submitted to dilaceration, or to the squeezing process.

In a greater quantity of the muscular juice, or of that obtained from various regions of the organism, it is certain that more positive results might be obtained.

We had intended to make this demonstration on a larger scale, and more than one hundred guinea pigs had been obtained for the purpose, but unfortunately a contagious disease baffled our intentions in a few days. The experiment, however, which we contemplated was successfully undertaken by Mr. Galtier, though less extensively, and he found that the same juice, which had tuberculized in a dose of four cubic centimetres, imparted the disease when injected in a dose of twelve. And again, he produced tuberculosis with the juice of the muscles of the shoulder; when under the same conditions that of the muscles of the thigh failed to take effect.

The irregular and unequal mode of distribution of the virus in the muscles is again well established by the experiments of Mr. Stubbe, who recently filled the position of Inspector of the abattoir of Louvain, who, while some experimenters failed in several attempts, each time upon different animals, succeeded twice with only a single animal in proving the noxious character of the flesh; in a third trial, however, obtaining a negative result, though experimenting with two animals.

We therefore believe it to be an error to attribute a high value to negative facts, especially when the number of experiments has been restricted by an inadequate supply of test animals.

We desire also to add that the virulence of the muscular juice does not give an exact idea of that of the flesh sold in the shops. Indeed, the latter contains lymphatic glands, which may conceal some tuberculous lesions, or bacilli, notwithstanding their appearance of perfect integrity. The recent works of Mr. Physalix have shown that in diseases where the microbes exist in the fluid media, the lymphatic glands easily contain germs with corresponding pathogenic proportions. But, as I desire as much as possible to adhere to the subject of tuberculosis proper, I will on this occasion mention a very interesting experiment of Mr. Loeret, the doyen of the Faculty of Medicine of Lyons.

The official inspectors of that city had seized a tuberculous steer, which had nevertheless attained a condition of remarkable fatness. This act of the municipal functionaries excited such violent opposition and remonstrance on the part of the owner that the interference of the Mayor of the city became necessary, and a commission was appointed, of which Mr. Loeret became a member, to examine and report upon the case. The result was that a lymphatic gland, taken from the muscular masses of one of the hind legs, and which to the unassisted sight appeared to be non-tuberculous, and crushed into pulp, infected a guinea-pig which was inoculated with it. This fact has a double significance, in proving the possibility of the existence of a general appearance of health and soundness, as indicated by the "splendid fatness" which was present, simultaneously with the fact of the decided virulence of the lymphatic glands, although exhibiting no outward or visible characteristics of a morbid kind; and this occurred in but a single one belonging to the category of subjects of which some of the partisans of tolerance have taken advantage to vindicate and reinforce their position.

Basing our reasons upon other facts, we have already claimed that the flesh of fat is equally noxious, if not more so, than that of the lean tuberculous animals; and we have not yet encountered any new arguments sufficiently potent to compel us to change our minds on this question.

We will not insist further on these points, since it is generally conceded that at times the flesh may produce tuberculosis through the connective tissue or the peritoneum

A more serious objection remains to be considered. It has been argued that the measures recommended by the last Congress were excessively rigorous, for the reason that it was not proved that meat of tuberculous origin could infect through the digestive canal.

We are charged with undertaking to settle this contention by a mere course of ratiocination, and arguing thus, for example: Tuberculous matter is infecting through the digestive canal, and therefore the juice of meat which sometimes tuberculizes through the connective tissue may cause tuberculosis by injection. No doubt this reasoning produces upon our mind a dirrimant effect. And if everything is to be determined by syllogisms in this matter, we can but think that it would be more logical to agree to our conclusions therein to say: "The juice of meat sometimes contains tuberculous virus, the virus infecting through the digestive canal; then the meat can be taken without danger." But we do not need a process like this to prove our facts.

Experiments upon the effects of the injection of the raw meat, just as it is sold in the shops, and even with the bones removed, have furnished a very respectable number of positive facts, and from these facts we *know* that the injection of raw meat has tuberculerized animals in the proportion of 11.8 per cent., or, in other words, more than the inoculation in the connective tissue.

Mr. Nocard affirms, in an excellent article recently printed, that there does not exist a good experiment showing that the injection of raw meat is capable of giving tuberculosis, "because," says he, "the authors have not been careful to avoid the soiling of the ingested meats through other virulent liquids, such as pus, or the mucosities of the respiratory tracts or other regions, and of removing the glands, which are so often crowded with tubercles."

It is easy to ignore the force of unfavorable experiments, by taxing them with error. But we see no reason to doubt the integrity and thoroughness of the investigators who are seeking to find a difference between the infecting qualities of tuberculous lesions proper and of suspected meats, and who, we must believe, have taken all necessary precautions for the removal of all such evidently virulent elements as would, if allowed to be present, disturb or prevent the results sought for and anticipated.

Let us add, that if the success of the examination is to be jeopardized by the soiling referred to, the operator has only to visit some well conducted abattoir and watch the dressing of some of the animals disposed of at these establishments, to satisfy himself and acknowledge that the meat of tuberculous origin which is sold to us is really very dangerous.

To resume: To describe the experiments instituted to prove the infectious character of meats as of the same nature with those in which tuberculosis has been produced by the injection of tuberculous products, is, in my opinion, to venture a hazardous assertion, and we can but look upon it as altogether the wiser course to consider the facts as they present themselves.

The meat of tuberculous animals may cause tuberculous infections through the digestive canal; but let us say that we would like to believe that the infection is less frequent in the cases of natural than in those of experimentally-induced ingestion, for the reason that in the latter case the suspected flesh is usually administered in greater quantities and at shorter intervals than in the former.

(*To be continued.*)

DIFFICULT PARTURITION AND THE AFTER-TREATMENT.

By Dr. G. A. Johnson, V.S., Odebolt, Iowa.

(A paper read before the Western Iowa Veterinary Medical Association).

As it is nearing that season of the year when the veterinarian is liable to be called upon to assist in difficult deliveries, I trust that a few remarks on the subject of difficult parturition may be in order.

It seems somewhat strange to me that none of our leading authorities have advocated the use of anæsthetics in difficult labor. As they have always been of much service in my hands, I here state that I am very much in favor of the use of chloroform, and my reasons for its use are somewhat as follows: 1st, that it renders the animal quiet, thus lessening the liabilities of the operator being injured, which is a matter of no small importance; 2nd, that when the animal is fully under the influence of the anæsthetic, the uterus is in a relaxed condition, thus giving the operator an opportunity to right the malpresentation with much more ease than when the uterus is firmly contracted, and labor pains more or less constant. There are some objections to using anæsthetics, as having the animal incumbent and constantly in the same position.

The indications for the use of anæsthetics may be summed up as follows: When the animal is vicious, when the malpresentation is of such a character as to render delivery very difficult and prolonged. These conditions of course can only be ascertained on examination, consequently the first step should always be to make an examination ; then if it is advisable to use an anæsthetic, place a casting harness on the animal, then allow her to lie down ; when down then draw up the ropes and securely fasten them ; then administer the chloroform (the anæsthetic I prefer) until profound relaxation is effected ; loosen the ropes so that the animal may be put in nearly as natural a position as possible, then begin the work of correcting the malpresentation.

In the majority of cases it will be necessary to keep the animal in a profound state of anæsthesia but a short time, for by removing the chloroform when the most difficult part of the malpresentation has been corrected, the animal will be so far recovered from the effects of the chloroform, that when the fœtus is in a correct position the natural pains will have returned to assist in the expulsion.

I have used chloroform in a number of cases without experiencing any bad results following its use.

There are many other points that will come up in connection with this portion of the subject, as to the different presentations, etc., yet I trust that they can be more advantageously brought out by discussion than in a paper, so I will next give you a few thoughts relative to the after-treatment of difficult parturition and retained placenta.

It was my misfortune to lose most of first cases of difficult parturition, either by septicæmia, metritis, or metroperitonitis; this loss stimulated me to try some new line of treatment, taking into consideration the pathology of the affection therapia, and the fact that in all the cases of metritis that I have met with, the uterus was in a relaxed condition. I began the use of ergot in the after-treatment, and now I usually give one or more doses of ergot after delivery has been accomplished, or after removing a retained placenta. My reasons for using this drug are as follows: In a case of difficult delivery the parts are always more or less lacerated and bruised; this condition tends to inflammation of the parts, which if unchecked is very likely to result in one of the forms of metritis. Now if ergot be given it lessens the blood supply to these parts, by restricting the caliber of the blood vessels, thus relieving the congestion. Again, when labor has been prolonged, the walls of the uterus becomes fatigued and weak, and consequently it does not contract upon itself properly, but when aided by one or more doses of ergot, as the case may require, the walls contact, the blood supply is to a degree cut off, and the patient is past danger.

In the case of retained placenta, or when the fœtus has been retained until decomposition has taken place and the uterus contains more or less purulent material, I proceed as follows: After removing the membranes, etc., I use my hand as a sort of spoon or scoop and remove all fluids, debris, etc.; then I gave a dose of ergotine (one to two grs.), and usually one gr. nitro-glycerine hypodermically.

Notwithstanding the fact that most of our best authorities recommend washing out the uterus with an antiseptic solution, it has invariably proven harmful in my hands. Whether I used too strong or too weak a solution I am unable to say, but as to the results I am certain.

In using ergot two points are gained: first the contraction of the uterus, thus expelling its contents and the lessening of its blood supply, thus lessening the danger of infection by absorption; secondly, its effect to check inflammation of the parts.

There is one point to which I wish to call your attention, and that is, not to push the ergot too far, or it will cause the uterus to contract with such force as to cause the animal pain, which will be manifest by symptoms very similar to those of ordinary colic. This pain may be relieved with morphia, when it is necessary to push the ergot or in cases where these pains are manifest after an ordinary dose has been given, which is from one-half to one fluid ounce of the fluid extract repeated at intervals of from three to six hours, according to the case; again, ergot has a slight constipating effect and it may advantageously be given in connection with raw linseed oil.

In regard to the combination of ergot and nitro-glycerine, while they are to a certain extent antagonistic in their actions, experience has demonstrated to me that while the ergot principally affects the tissues of the uterus and vagina, that nitro-glycerine has but a very slight effect on the blood vessels of irritated or injured tissues, and by its action on the blood vessels of the other portions of the body it affords quite a relief to the congested parts, consequently the combination proves very beneficial and constipation is not so likely to follow its use as when ergot is used alone.

In conclusion I wish to emphasize this point, that I do not give the ergot until I have removed all substances from the uterus, then to counteract the inflammatory process, and to prevent absorption, and that each must be further treated according to its indications.

PARTURIENT APOPLEXY.

By Chas. W. Heitzmann, D.V.S., Jackson, Miss.

Few diseases affecting animals have received a greate amount of attention or given rise to more divergent theories treatment, etc., than the above mentioned. Therefore it wil not be inconsistent for us to advance a different theory an treatment. The unanimous opinion with regard to this disease is, that it is peculiar to the parturient condition, and tha a state of coma is more present from whatever cause. Thi cause we will endeavor to show. It has been argued tha plethora, age, temperature, infection, constipation, overfeeding, etc., are prime causes of this disease, and treatment t accompany each feature has from time to time been suggeste and practiced with more or less success. It has also bee advanced that the disease is purely nervous in its natur This theory we hold as correct and *we* ascribe the cause t suppression of the lochia. It will not be necessary to ente into a discussion as to the necessity of this discharge following parturition, but suffice it to say that the uterus is thu elieved from its physiological hypertrophied condition and of he excitement of which it is the seat during pregnancy and arturition. Now as to the treatment. Restore the lochial lischarge, which is best done by introducing the hand nto the uterus and causing an irritation; it is better if his irritation amounts to a slight hemorrhage. It can also e accomplished by introducing one of the poles of an elecric battery. Then begin the administration of your stimuants in whatever shape you may desire, as the case may inlicate. We have given this mode of procedure a thorough rial during the past year, and it has proved a success in every nstance.

DEHORNING EXPERIMENT.

By Clinton D. Smith and T. L. Hæcker.*

Last summer it was decided by the Regents to place upon he station farm a herd of good dairy cows, selected from atives, thoroughbreds and their grades. In carrying out his purpose, some twenty-five cows were purchased during he month of October and shipped to the station. When they vere let into the yard, it was noticed that the larger cows lrove the smaller from feed and water, and often prevented heir drinking unless protected by the attendant. It was aparent that unless some means could be devised to prevent his, serious losses would occur, from irregular feeding and lrinking, and by premature births.

It was decided that the quickest and most effectual remedy vas dehorning. This is, by many, considered a questionable ractice, because of the pain inflicted during the operation. n order that the immediate effects might be studied, a comarison was made of the daily yield of milk and per cent. of at before and after dehorning. These results were compared vith the record of a number of cows not dehorned, but which aw the operation and smelled the blood.

The cows Franc, Roxy, Sully, Gran, Clara and Crossy were over five years old, and Patsey, Rossie and Bettie ove four years; these were dehorned on the 9th of November 1891. They were fastened in a stanchion, the head draw forward by means of a halter and small tackle-blocks until th neck was extended to its full length, so that the horns wer sufficiently far from the stanchion to permit the free use o the narrow-bladed butcher's saw which we used.

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* From Bulletin No. 19, Experimental Station of University of Minnesota.

The time occupied was about five seconds per horn; a soon as the horns were removed, pieces of cotton clot smeared with pine tar were placed upon the wounds. Car was taken to saw the horns inside of the outer edge of th skin, removing with the horn a narrow strip of hair. Durin the operation the cows gave every indication of intense su fering; but upon being released no sign of pain was visibl The wounds healed rapidly, without any other applicatio than the tar.

Table I is taken from the regular herd record, showin the pounds of milk given by each cow for the three milking before they were dehorned, the per cent. fat and total fat.

TABLE I.

	FIRST MILKING.			SECOND MILKING.			THIRD MILKING.		
	Lbs. Milk.	Per cent. Fat.	Total Fat.	Lbs. Milk.	Per cent. Fat.	Total Fat.	Lbs. Milk.	Per cent. Fat.	Tot. Fa
Betty......	11.5	4.3	.494	11.	3.8	.418	11.5	4.1	.47
Clara......	9.5	4.6	.437	9.	3.7	.333	7.1	4.	.28
Crossy.....	6.5	4.7	.305	6.5	4.9	.318	6.5	4.4	.28
Franc	13.5	3.9	.526	13.5	4.	.540	15.	3.6	.54
Gran	10.	3.8	.380	9.25	3.4	.314	9.5	4.3	.40
Patsey.....	10.5	3.5	.387	11.	3.6	.396	11.15	4.	.45
Rossie.....	10.9	4.2	.457	10.	3.3	.330	10.9	3.7	.40
Roxy	13.9	4.1	.569	12.75	3.5	.446	13.5	3.9	.52
Sully	21.	4.5	.945	20.	4.3	.860	20.75	4.	.83
	107.3		4.5	103.		3.955	106.		4.

Total milk yield for three milkings, 316.3.
Total pounds of fat for three milkings, 12.753.

Table II shows the pounds of milk given by each c during the three milkings immediately following dehornin with per cent. of fat and total fat.

TABLE II.

	FIRST MILKING.			SECOND MILKING.			THIRD MILKING.		
	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.
etty......	10.6	2.9	.307	11.5	4.3	.495	9.25	4.6	.426
ara... ..	12.25	7.	.857	9.	5.5	.495	9.25	4.7	.435
ossy.....	5.5	5.5	.302	6.	6.1	.366	6.5	5.9	.383
anc......	12.75	3.4	.433	13.	3.9	.507	13.5	4.3	.586
an	9.5	2.7	.256	7.5	3.8	.285	8.5	4.7	.400
tsey.....	10.	4.	.400	10.5	3.1	.325	10.5	3.8	.399
ossie.....	9.	3.2	.288	9.75	3.8	.370	9.25	3.7	.342
oxie......	11.	4.6	.506	11.	4.8	.528	11.75	4.3	.505
lly	19.	3.1	.589	19.75	4.	.790	20.	3.6	.720
	97.6		3.938	98.		4.161	98.5		4.190

Total pounds of milk for the three milkings, 294.1.
Total pounds of fat for the three milkings, 12.289.

Table III shows the pounds of milk given by the six cows ot dehorned, covering the same period as Table I, with per ent. fat and total fat.

TABLE III.

	FIRST MILKING.			SECOND MILKING.			THIRD MILKING.		
	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.
ertie.....	7.7	5.	.385	7.75	4.7	.364	8.	4.8	.384
ouston...	15.5	5.1	.790	12.75	4.8	.612	13.25	4.9	.659
aria......	13.	4.7	.611	13.5	4.7	.644	12.5	4.6	.575
ttie	12.75	5.	.637	12.25	4.	.490	12.1	4.5	.545
ide......	6.4	6.9	.441	5.5	5.6	.308	5.75	5.3	.305
icksey...	13.25	5.1	.676	12.15	4.9	.600	12.25	5.5	.674
	68.6		3.540	64.		3.008	63.85		3.132

Total pounds of milk for the three milkings, 196.45.
Total pounds of fat for the three milkings, 9.68.

Table IV shows the pounds of milk given by the six cows ot dehorned, covering the same period as Table II, the per ent. fat and total fat.

TABLE IV.

	FIRST MILKING.			SECOND MILKING.			THIRD MILKING.		
	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.	Lbs. Milk.	Per cent. Fat.	Lbs. Fat.
ertie.....	7.	3.9	.273	8.25	6.	.495	7.5	4.9	.367
ouston...	11.15	3.5	.402	15.5	5.2	.806	13.	5.3	.689
aria......	12.	4.3	.516	13.5	4.8	.648	13.	4.6	.598
ttie	11.5	3.8	.437	12.75	4.3	.548	12.5	4.2	.525
ide......	6.	4.8	.288	5.75	5.4	.301	5.5	5.8	.319
icksey...	11.5	3.7	.425	12.	4.3	.516	11.5	4.8	.552
	59.5		2.341	67.75		3.314	63.		3.050

Total pounds of milk for the three milkings, 190.25.
Total pounds of fat for the three milkings, 8.605.

In Table V the first period has reference to the time covered by the three milkings immediately prior to dehorning, and the second period to the three milkings after dehorning.

TABLE V.

SUMMARY.

	Nine Cows Dehorned.	Six Cows not Dehorned.
Milk yield first period	316.3	196.45
Milk yield second period	294.1	190.35
Shrinkage of milk during second period	22.2	6.2
Per cent. of shrinkage in milk	7.	3.
Yield of fat in lbs., first period	12.753	9.68
Yield of fat in lbs., second period	12.289	8.60
Shrinkage in lbs., fat	.464	1.08
Per cent. of shrinkage in fat	3.	11.

By comparing the yield of milk of the cows dehorne with that of the cows not dehorned, it will be observed tha the former gave 22.2 lbs. less during the three milkings afte being dehorned, the latter losing 6.2 lbs.; the dehorned cow shrinking seven per cent., while the others lost three per cent

Comparing the total fat products of these two groups o cows for the same periods, we find a much greater discrepancy, the dehorned cows showing a shrinkage of only thre per cent., while the six cows not dehorned lost eleven pe cent. It would appear from these observations that while th operation of dehorning may cause a slight, temporary vari tion in the flow of milk and fat content, the normal flow an per cent. of fat is quickly recovered, and that cows only se ing the operation and smelling the blood show a greate shrinkage in fat than do the ones dehorned.

BROKEN WIND.

By Enos Walter, Student.

(A paper read before the Chicago Veterinary College Association).

Inasmuch as you have listened to one essay on this subje this session only certain points in the disease will be discuss in this paper. We will begin with a sketch of the pneum gastric nerve.

The pneumogastric nerve arises by its sensitive roots fro a nucleus of grey matter on the floor of the fourth ventricle, and by its motor roots from a spot just behind the sensitive roots, and coming from the respiratory tract. It leaves the skull through the foramen lacerum, passes down the neck in company with the carotid artery, enters the thorax and from there proceeds to the abdomen. Throughout its entire course the pneumogastric preserves intimate relations with the great sympathetic nerve, numerous anastomosing branches passing between them. The pneumogastric gives off branches to the pharynx, larynx, trachea, bronchial tubes, heart, œsophagus, stomach, liver and intestines; though to what extent its filaments are distributed to the liver and intestines is not known.

The functions of the pneumogastric nerve that concern us at present are:

1. It gives exquisite sensibility to the mucous membrane lining the larynx and bronchial tubes, and is also the sensory nerve of the pharnyx, trachea, œsophagus and stomach.

2. It excites contractions of the muscular fibres of the bronchial tubes.

3. It provokes movements of the œsophagus and stomach.

4. It is a stimulating nerve to the respiratory center, though its laryngeal branch is inhibitory to that center.

5. It is the inhibitory nevre of the heart.

In order that all the organs concerned in respiration may act in harmony it is necessary that they be provided with a governor. This governor of respiration is called the respiratory center, and is situated in the medulla. "This center may be stimulated directly by the condition of the blood; an increase of carbon di-oxide or a diminution of oxygen in the blood causes an acceleration of respiratory movements, and the reverse of these conditions causes a diminution of the respiratory movements.

"The center may also be stimulated indirectly, by reflex action. The medulla may be excited to action through the pneumogastric nerves, by the presence of carbon di-oxide in the lungs irritating their terminal filaments; also through the fifth nerve by irritation of its terminal branches; also through the nerves of general sensibility. In either case this center reflects motor impulses to the respiratory muscles through the phrenic, intercostals, inferior laryngeal and other nerves." [Brubaker].

"The respiratory center, while not dependent upon impulses coming through afferent nerves, is especially modified in activity by impulses traveling through the pneumogastric nerves. If one pneumogastric nerve be cut, respiration becomes slower and deeper, while the pauses between the respiratory movements are more prolonged. If both be cut, the same is true to a greater extent, and the amount of oxygen absorbed and carbon di-oxide exhaled remains the same. Irritation of the central ends of the cut pneumogastrics increases the rapidity of respiration. The vagus may then be considered as a stimulating nerve to the respiratory center, and the laryngeal nerves as inhibitory nerves to that center, which when stimulated arrest respiration, the diaphragm being in a state of relaxation and the thorax contracted.

"Deficient oxygenation of the blood acts as a stimulant to the respiratory center and causes the respiratory movements to become quicker as well as deeper, while expiration becomes especially increased in power. In a greater degree the deprivation of oxygen from the blood appears to cause the extension of the stimulus from the respiratory center to other adjoining motor centers and we find not only are the ordinary muscles of respiration thrown into violent action, but that every muscle in the body connected with respiration is thrown into a state of forced contraction. Such a state is described as dyspnœa.

"Ligating the vertebral and carotid arteries produces dyspnœa by decreasing the supply of oxygenated blood brought to this center. So weak heart may cause it, and so also may temperature above the normal, from the fact that increased temperature leads to increased activity of chemical processes and so to rapid exhaustion of oxygen.

"From deprivation of oxygen the first stage is dyspnœa, characterized by extraordinary efforts of the muscles of respiation, expiration being especially convulsive." [Smith].

Now let us bear in mind these points:

1. The elasticity of healthy lung tissue is equal to a force of 72 pounds per square foot of lung surface, which is sufficient to expel air from the lungs without aid from the expiratory muscles, while the animal is in a state of repose. Also that the movements of the lungs are entirely passive.

2. The respiratory center may be stimulated by lack of oxygen in the blood supplied it, and also through the action of sensory nerves which are irritated by excess of carbon dioxide or lack of oxygen.

3. Disease often begets an irritable condition of parts affected, and this irritable condition of nerves tends to make them magnify impressions—or in other words makes them over-sensitive.

4. The vagus is a stimulating nerve to the respiratory center, and also by its action causes contraction of the bronchial tubes.

I beg leave to present here a few points on asthma in man which I quote from Pepper's "System of Medicine."

"Asthma is a violent form of paroxysmal dyspnœa, not dependent upon structural lesion; characterized by wheezing respiration with great prolongation of the expiration and the absence of all symptons of the disease in the intervals of the attacks.

"In ordinary respiration the inspiratory movement is twice as long as the expirium. In asthma this is reversed, the expiratory movement being four or five times as long as the inspirium.

"The wheezing sound is usually heard only during expiration.

"Although the dyspnœa is great, there is no increase in the frequency of the respirations so long as the patient remains quiet, but on the contrary they are often less frequent than in health.

"The circumference of the chest is increased during the paroxysm, due to transitory emphysema, which disappears with the attack.

"Although bronchial asthma is essentially a neurosis and therefore purely functional in its character, it is rare for it to continue for any great length of time without causing some organic affection of the lungs or heart. The most common sequel of asthma is emphysema.

"The cause of this emphysema is seen in the fact that when the inspiratory muscles act they tend, by the negative pressure which they exert on the contents of the thorax, to dilate not only the air-cells but also the tubes leading to them ; while the positive pressure exerted by the expiratory muscles tends to close the already partly closed bronchioles at the same time it is trying to force air out through them. Hence air can enter the lungs much more easily than it can escape, and after each respiration a larger quantity of residual air remains in the lungs till the positive pressure exerted by the elasticity of the lung tissue, added to that exerted by the muscles of expiration, is sufficient to expel as much air as the inspiratory muscles can bring in.

"Owing to this same negative pressure, or tendency to produce a vacuum, the capillary blood vessels of the lungs become distended and congested. Frequent and severe attacks in time cause this dilatation to assume a permanency, and chronic congestion is the result. This state of chronic congestion is occasionally attended with serious exudation into the interalveolar tissue, which, by pressing upon the adjacent air-cells causes their obliteration. This œdema with the remains of the compressed air-cells and the viscid mucous stagnation in the finer tubes, forms the little islets of carnified tissue known as lobar pneumonia.

"Hypertrophy of the muscular walls of the bronchial tubes is also seen in old cases of asthma ; this thickening of their walls causes diminished calibre.

"Among human beings there are two asthmatic males to one asthmatic female. There is no case recorded of the death of a human being from uncomplicated asthma.

"Causes of asthma in people:

"Enlarged bronchial glands pressing upon the pneumogastric nerves may cause it. In the great majority of cases, however, the exciting cause does not act directly on the pneumogastric nerves, but upon the skin or some other remote organs, whence it is reflected back through the nerves of respiration to the bronchii. Dust acting as an irritant to the mucous membrane of the respiratory tract may cause it.

"In persons predisposed to bronchial asthma the eating of any indigestible substance may of itself be sufficient to cause the attack. Dyspepsia in its various forms and the presence of irritating substances in the alimentary canal are very frequent causes of asthma."

"The intimate relations existing between the lungs and stomach," says Pepper, "and the fact that asthmatics usually suffer at the same time with dyspepsia, make the question of diet an important one."

Let us compare asthma in man, and broken wind in the horse.

We find a close resemblance all through, in cause, symptoms and structural lesions, if we compare cases of equal severity and long standing.

Take the comparative length of time occupied by inspiration and expiration; we find in the broken-winded horse at rest about double the time occupied in expiration as in inspiration. We find emphysema of the lungs. We find periods of comparative ease and periods of marked dyspnœa. We find the accompanying dyspepsia often, and find the disease influenced by the diet. We find that death is rarely caused by it, and that the treatment is very much the same for both. We also find, according to Williams, the thickening of the muscular walls of the bronchial tubes; but whether we will find two broken-winded males to one broken-winded female among horses I am unable to say.

As to the definition of broken-wind the one given by Williams is probably about the best. He says it is "A non-inflammatory disease characterized by difficult and peculiar breathing; the inspiratory movement is performed with ease, the expiratory by two apparent efforts. The difficulty in breathing is constant, but is liable to remissions and severe exacerbations. A peculiar cough called 'the broken-winded cough' is a constant symptom; indigestion and flatulence aggrivate the dyspnœa."

While the horse is quiet he will show it very little at times, but at other times, owing to the asthmatic character of the disease, he may heave much even while perfectly quiet. Even if he does not show it while quiet, he will be found incapable of much exertion without exhibiting more or less difficulty in breathing. Thus he is never entirely free from the disease as he would be were it uncomplicated asthma; nor is the disease equally severe at all times, as it would be if emphysema alone were the cause.

The causes of broken-wind in a horse are primarily the causes of the asthma and emphysema. How asthma may cause emphysema has already been explained. Emphysema may also be caused by the occlusion of some of the bronchial tubes as a result of bronchitis, as the cells at the end of the open tubes have to dilate more as the chest expands, to make up for the non-dilatation of the cells at the ends of the occluded tubes. This over-distention of part of the air-cells often causes rupture of their walls, and the condition known as vesicular emphysema is the result.

The causes of asthma have also been touched upon. The most common causes of the disease as it occurs in the horse are, I think, heredity and indigestion.

That the children of asthmatic people have a decided predisposition to the disease is proven by statistics, as is also the fact that asthmatics are in the majority of cases also dyspeptics. I have no statistics to show this to be the case with horses, but I believe it will be found the same with horses as with men. Robertson in his "Equine Practice" says, "It is generally admitted by horsemen that broken-wind is hereditary."

It is believed that indigestion causes asthma from the effect it has in rendering the pneumogastric nerve irritable, or over-sensitive. Prof. Williams says heaves is a symptom of indigestion and classes it with dietetic diseases.

The effect of both asthma and emphysema is to reduce the capacity of the lungs for supplying oxygen to the blood, and rendering it a difficult task for them to supply it in requisite amount except when the animal is quiet and needs but a small quantity. The lack of oxygen in the blood stimulates the respiratory center, and dyspnœa is the result. The difficulty of expiration is due to lessened elasticity in the emphysematous lung and the partial closure of the bronchii as a result of the asthma and hypertrophy of their walls.

The cough that accompanies broken-wind is but seldom heard in some patients, while in others that heave no worse it is very often heard and is sometimes quite distressing. It is no doubt caused in many instances by an irritable condition of the mucous membrane lining the larynx, trachea and bronchial tubes; very often I think, from a diseased or over-sensitive condition of the pneumogastric nerve which gives this mucous membrane its sensibility. In some cases the cough is said to be due to a lack of bronchial secretion, while still in others to excess of secretion.

The emaciation and enlarged abdomen seen in many broken-winded horses are due to dyspepsia. As digestion is imperfectly performed, a greater amount of food is consumed and chronic dilatation of the stomach and intestines is the result. The diseased condition so brought about affects the pneumogastric and sympathetic nerves and it is no doubt a very fruitful source of broken-wind.

PREVENTION.

The first step in preventing broken-wind is to select for breeding individuals of sound wind and descended from parents free from the disease, as the disease may remain latent for one generation and reappear in the next.

The next preventive measure is good care—that is, proper feeding, watering and working. There is no question but a lack of grain and too much hay, especially if the horse be worked hard and the hay be of poor quality, is a fruitful source of dyspepsia and broken-wind. A horse must needs have strong digestive organs to live upon hay or rough fodder alone and do hard work for any length of time.

A horse worked in the field or upon the road from 1 P. M. till 7 P M., is in no condition to receive all the water he wishes to drink at once; yet nearly all farm horses are so watered in the summer. Many horses so watered drink from twenty to thirty quarts of water at a time. This of course aids in bringing on dyspepsia and visceral neuralgia.

As to regulating the work to prevent broken-wind no rule can be laid down. I would only suggest that it is impossible for a horse exhausted by work to digest rough food enough to keep him in good condition, without overtaxing the digestive organs, and that long continuance of this will lead to dyspepsia and so to broken-wind very likely.

Another step in the prevention of this disease is to furnish good nursing and tonics to horses recovering from such diseases as influenza and bronchitis; the respiratory system is then weak and needs attention.

Prof. Williams says, " This disease, like many others that result from ignorance, is fast becoming a thing of the past." It seems to me that such is not the case in this country.

Why certain foods so markedly affect this disease has long been the subject of inquiry. It appears that, although no one has been able satisfactorily to explain this question, its study has led to the discovery of valuable facts.

Dr. Somerville of Buffalo, states that prairie hay is more laxative than timothy hay, and that the horse cannot eat half as much of the prairie hay in a given time as of the timothy. He also thinks grass better than hay because it is more laxative, and that corn-fodder is equally as good as prairie grass or hay, as it is laxative and not very bulky. He farther states that straw is better than hay to feed the heavey horse.

While I think Dr. Somerville partly right, I have found that a horse when hungry will eat as many pounds of prairie hay per hour as of timothy.

Prof. Law in his " Veterinary Adviser " says, " Over-feeding on clover hay, chaff and other bulky and innutritious foods is the main cause for heaves; in Arabia, Spain and California, where there is no long winter feeding on hay, and in our territories, where clover is not used, heaves is a disease that is virtually unknown; it has advanced westward just in proportion as clover hay has been introduced as a general food for horses, and it has disappeared in England and New England in proportion as the soil has become clover-sick and other aliment had to be supplied."

Dr. Law also recommends corn-fodder for broken-winded horses, stating that it is laxative food, and says rye-straw is better than hay for such horses.

Now it seems to be the general idea that clover hay is bad food for a heavey horse: 1. Because it is bulky; 2. Because it is dusty; 3. The horse loves it and so will eat much of it. And prairie hay is supposed to be good food for a heavey horse, 1. Because it is not so bulky; 2. It is not dusty; 3. The horse is not so apt to overeat of it; 4. Because it contains more or less rosin weed.

Let us remove the objectionable features of clover hay and see the result.

We will take a heavey horse and feed him dampened clover hay in small quantities, thus doing away with all objections to it as regards bulk, dust and overeating. Now it should be as good as corn-fodder, but we find it is not, although it is much better than before. There is then some other difference. Is it not to be partly accounted for by the difference in chemical composition? Consider these facts: A dog when fed upon meat uses but 75 per cent. of the oxygen he takes up, in the formation of carbon dioxide. The principal part of the remainder goes to oxidize the nitrogenous food and convert it into urea. When fed upon vegetable food he uses 90 to 95 per cent. of the oxygen taken up, in the formation of carbon dioxide.

If more albuminous food be eaten than is necessary the extra amount, if not too great, is digested, oxidized and excreted as urea.

Fatty foods lessen the destruction of albumen in the body, while much water increases it. The combustion of albuminoids is not the source of muscular force.

The ratio of albuminous food to non-nitrogenous food required by a working horse is from 1:5 to 1:8, and a working horse weighing eleven hundred pounds requires daily, according to Smith, about two pounds of digestible nitrogenous food stuffs, and ten pounds of non-nitrogenous food stuffs. Suppose we feed clover hay and oats, equal parts by weight, enough to give the required ten pounds of non-nitrogenous food-stuffs. It would require twelve pounds of each daily, and this would also give the required two pounds of nitrogenous food stuffs. But in practice it is impossible to feed just enough and no more. Therefore we must feed an excess of food, but in order for our patient to get along with as little oxygen as possible, we wish to avoid any excess of nitrogenous food, and to do this we must give him food deficient in nitrogen. The rough foods fulfilling this requirement are oat-straw, marsh hay, prairie hay and corn-fodder, and the grains most nearly approaching this proportion are corn, barley and oats.

Another point I wish to bring up is this: We all know that starving a broken-winded horse helps very much to reduce the labored breathing. It seems to be the general belief that this result is brought about simply by the mechanical effect of a comparatively empty state of the stomach and intestines giving more room for the lungs and less work for the muscles of respiration. While this idea is correct so far as it goes, it seems that another important point is often overlooked, viz.: An animal fasting and perfectly quiet requires only two-thirds as much oxygen as when quiet and digesting a meal. The same rule holds good in ordinary labor. When the period of fasting is prolonged the difference must be greatly increased, as the amount of oxygen used is directly proportional to the amount of tissue destroyed, and it is found by experiment that a small dog loses eight per cent. of his weight in the first twenty-four hours of fasting, while on the fifth day he loses only three per cent. of his original weight.

SOME REMARKS ON THE TREATMENT OF WOUNDS IN THE DOMESTIC ANIMALS.*

W. B. Niles, D.V.M.

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Although wounds in man and the lower animals are similar, as far as causation and repair are concerned, there must of necessity be, in many cases, a difference in their practical treatment, on account of not being able to control our patient. The dressings used in human practice (antiseptic gauze, bandages, etc.) cannot always be kept in place, and consequently the wound soon becomes infected with pus microbes and other pathogenic bacteria. Suppuration and slow healing follow, with septicæmia, pyæmia, erysipelas and tetanus as possible sequelæ. All veterinary practitioners know how utterly impossible it is to keep a majority of the wounds met with in every-day practice, and which must be treated under all kinds of adverse circumstances, aseptic. While it is easier to prevent suppuration than to arrest it, we are often unable, even when the wound has been seen soon after its infliction, to get healing by primary union. Being unable to maintain asepsis and thus prevent suppuration, a majority of wounds must heal by the formation of visible granulations, and the question which presents itself to the practitioner is, how shall such wounds be treated? Disinfecting solutions should, of course, be included in the treatment of all wounds, but what should be done after disinfecting as thoroughly as possible? Should antiseptic ointments be applied without bandages, as is sometimes done? or should the wound be dressed with some antiseptic and then bandaged? or, again, should some powder be dusted on and no bandage applied?

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It is not my purpose in this article to discuss the treatment best adapted to the different classes of wounds met with in veterinary practice, but to refer briefly to a line of treatment adapted to most granulating wounds, which has given good results in my hands, the theory of which has been demonstrated to be correct by some experiments made in our laboratory at the Iowa Agricultural College. These experiments I will describe further on. It is well known that where granulating wounds are exposed to the atmosphere they have a tendency to scab over if suppuration be not too profuse. Taking advantage of this fact. the treatment referred to consists of applying something to the surface of the wound which will prevent germ growth, and at the same time assist nature in forming a protecting scab. (While I am aware that this line of treatment is not new to many, yet I know by frequent contact with members of the profession that it is not generally practiced.) Of the many preparations used for this purpose I have found none as effective as iodoform and calomel combined. Theiodoform acts as an antiseptic, and the calomel, being a dessicant, forms, in conjunction with the wound secretions, a firm scab.

Before applying the powder the wound should be irrigated for several minutes, ten at least, with a disinfecting solution. I believe the mistake of not irrigating wounds long enough is often made. As experiments have shown that the staphylococcus pyogenes aurens is not always destroyed by being ten minutes in a 1.1000 solution of corrosive sublimate, how can we expect to destroy it in less time in the recesses of the wound when it is protected by the secretions? After as thoroughly disinfecting the parts as possible, the iodoform and calomel, mixed in equal parts or one part of iodoform to two of calomel, should be dusted over the surface of the wound until no more will adhere. After about one-half hour it should be dusted again and then left until the next day, when, if suppurating but little, all that is necessary is to apply again as the day before. If, however, there is much suppuration and no scab formed, the wound should be again irrigated and then treated as before. All that is generally necessary after the first or second application is to apply the powder once or twice daily until a hard scab forms over the entire surface of the wound. If this treatment is properly carried out the wound soon becomes covered with a hard, dry, protecting covering, under which cicatrization goes on rapidly. Treated in this way it will do much better than if covered with oakum, jute, or absorbent cotton and then bandaged, because in the last instance suppuration will not be entirely arrested, and what pus forms will be kept more or less in contact with the wound, and this, with the rubbing of the bandage against the part, interferes with the granulation and prevents the formation of a normal scab. As a result the wound heals slowly, and in many cases fungus granulations appear.

If the wound be simply washed with an antiseptic solution, as is often done, and no powder applied, suppuration, although retarded for a little while, soon becomes profuse again, causing the natural scab to be imperfectly formed.

I do not wish to be understood as advocating this line of treatment for all wounds. I only recommend it for those which of necessity must heal by granulation, and which cannot be kept aseptic. Those which can be induced to heal by primary union, or can be dressed antiseptically and kept aseptic, should be treated the same as similar wounds in man. The following cases will serve to illustrate to what kind of wounds the iodoform and calomel can be successfully applied.

Case 1.—Sorrel filley, about 2 years old, received, among other injuries, by running into a barbed-wire fence, an oblique cut three inches in length across the anterior face of the large metacarpal bone, completely severing the tendon of the ant. extensor of the phalanges. As the case was not seen until several days after the accident, no sutures were inserted, but the wound was dressed antiseptically and a roller bandage applied. This treatment did not prove satisfactory. Pus accumulated under the dressing and the granulations becoming unhealthy, I decided to apply the iodoform-calomel powder. Daily applications of this soon caused the wound to become covered with a protecting scab, under which cicatrization progressed rapidly.

Case 2.—Gelding, with a large, lacerated wound just above the inner heel of the posterior limb, involving the coronary band, was brought to the college infirmary for treatment. Disinfection of the entire foot was attempted by placing it in a bucket of corrosive sublimate solution, after which the wound was dressed antiseptically and bandaged. On account of the location of the injury it could not be kept aseptic, although suppurating but little. It was constantly irritated by the bandages and made but little progress toward repair. For this reason all bandages were discontinued and the iodoform and calomel applied. The case began to improve at once (quite a change being noticed in twenty-four hours), and made a good recovery.

Case 3.—A bay mare, 3 years old, running in pasture, became frightened in the night and ran into a fence, inflicting a wound about six inches in length across the inner side of the fore-arm, just above the lower termination of the superficial pectoral muscle. It was washed with a disinfecting solution, sutured, and bandaged. Being in a difficult place to dress properly, suppuration occurred and only a small portion healed by primary union. After the sutures gave way bandages were discontinued and only the powder applied, as in other cases. The wound healed fast.

A good way to apply the powder is by means of the small insect-powder blower, which can be obtained of any druggist. In the absence of this or any other powder blower, I apply it with a spatula, or small wooden paddle. In some cases this is preferable to the blower, as more can be made to adhere.

The experiments and results obtained therefrom, referred to in the beginning of this article, were as follows: Knowing that iodoform was extensively used as an application to wounds, but still claimed by some to be of little value, we determined to test its effects on the staphylococcus pyogenes aureus, one of the most common pus microbes. In order to have the circumstances as similar as possible to those in wounds treated with iodoform, surface inoculations were made on agar-agar and iodoform dusted over the surface. The cultures were then either left to develop in the temperature of the room or placed in a thermostat at a temperature of about 37° Centigrade. No growth was perceptible in any tube treated in this way, even when left in the thermostat for several days, but in every instance the control tube (inoculated tube not dusted with iodoform) showed, after twenty-four hours, a vigorous growth of the aureus.

The same experiment was repeated, with the exception of using bituminized iodoform in place of the simple iodoform with the same results. No growth whatever took place except in the control tube, where it was vigorous.

The new preparation known as iodol, which is claimed to be equally as effective as iodoform, but minus the disagreeable odor, was also tried, but with very different results. In every instance there was a very vigorous growth, apparently as vigorous as in the control tubes.

In order to determine whether or not calomel could be added to iodoform without destroying the antiseptic effects of the latter, experiments were made with a mixture of equal parts, and one part of iodoform to two of calomel. Both mixtures proved as effective as iodoform alone.

Similar experiments were also made with boracic and salycilic acid and pyoktanin (methyl violet). Each preparation was used alone, and in all cases there was no growth, except in control tubes.

From these experiments we conclude that all the preparations experimented with will prevent germ growth in a wound if kept in contact with all parts of its surface. Iodoform, bituminized iodoform, and iodoform and calomel mixed, not not being soluble in the wound secretions, will remain longer on the surface, and are consequently better preparations to use than the others.

REPORTS OF CASES.

OPERATION FOR RADICAL CURE OF INGUINAL HERNIA IN A STALLION.

By A. W. Clement V.S., Baltimore, Md.

The history of the case.—The hackney stallion Lavallette was bought by the present owner, Mr. S. M. Shoemaker of Baltimore, in New York, May 25th, 1891, from Hon. A. J. Cassett, who bred him. He was foaled in March, 1890. He was shipped to Mr. Shoemaker's farm near Baltimore the third day following the purchase. When he had been at the farm about ten days he had a severe attack of distemper. On examining him one day during his convalescence, I noticed that what appeared to be the right testicle was rather larger than the left and pointed posteriorly.

On manipulation the greater part of the mass was found to be soft, very compressible and felt like a bunch of strings. A much harder substance, in form like a testicle, occupied the anterior upper part of the mass.

The animal was kept up during the day, on account of the heat, in a small darkened house by himself, and at night allowed to run in a yard adjoining the house. It was soon noticed that the mass was larger in the morning than at night. Sometimes at night the entire mass, including the testicle, would be drawn up into the abdominal cavity.

I was one day able to reduce the soft mass, at the same time holding thegland in place. The hernia was constantly becoming larger; the stallion, though apparently desirous, only once could be persuaded to serve a mare. As he was a very promising colt and of rare good breeding, it seemed a great pity to perform the covered operation of castration. It was finally determined to perform, if possible, Halsted's* operation as practiced for the radical cure of hernia in man.

The horse was led to Baltimore, a distance of twelve miles, on January 20th, and placed in a box stall in a livery stable yard preparatory to the operation. This location was secured as, in my opinion, the most favorable, on account of its good ventilation and isolation.

The arrangements were finally completed for the operation and the animal was put on very light rations for thirty-six hours. Except that sterilized instruments and ligatures were employed, no attempt at antisepticism was made.

The horse was cast and so bedded with straw as to make his rump several inches higher than his shoulders. The hind leg on the affected side was removed from the hobble and, abducted and extended as much as possible, was held in position by means of a rope attached to a hobble around the ankle, passed over a hook and held by a groom. With the animal in this position the hernia could be thoroughly examined and the exact size of the ring determined. The protruding bowel returned to the cavity as soon as the animal was on his back, and the testicle could be distinctly felt.

The operation.—The horse was anæsthetised with ether. One grain of morphia was administered hypodermically before the administration of the anæsthetic.

1. The skin incision, parallel to Poupart's ligament and

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*Johns Hopkins Hospital Bulletin, Vol. 1. No. 1., and ibid, Vol. 2, Surgical fasciculus No. 1.

bout eight inches long, extended from the upper part of the crotum to a point perhaps two inches external and anterior o the internal abdominal ring.

2. The external ring and aponeurosis of the external oblique uscle being fully exposed, the aponeurosis of the external blique muscle and the internal oblique and transversalis uscles were divided to a point about one inch external and nterior to the internal abdominal ring.

3. The sac was isolated and incised. The hernia was of he congenital variety. The testicle was atrophied and the lobus major of the epididymis occupied the external abdomnal ring. It was therefore impossible to perform a horoughly radical hernia operation without sacrificing the esticle either by amputation or by constriction of its epiidymis.

4. The testicle was amputated and the peritoneal cavity losed off by a few quilt sutures applied along a line considrably higher than the so-called neck of the sac. The sac was xcised close to this line of sutures.

5. Six quilt sutures, passed very deep, were taken through he pillars of the external ring and through the divided exteral oblique aponeurosis and the internal oblique and transersalis muscles.

6. The skin wound was closed by buried skin sutures.

The transplantation of the vas deferens, one of the princial features of Halsted's operation, was, under the circumtances not indicated.

He was kept well under morphia and lay very quietly ntil late in the evening, when, as he became uneasy the hobles were removed and he was allowed to rise, four men being resent to assist him should he have any difficulty in getting p. The floor, which was of clay, was built up by bedding o that he stood with his rump at least six inches higher than is withers, and his head was tied up so that he should not ttempt to lie down. The next morning a bar was put across he box three feet from the wall so that he could not move ut of position.

The day following the operation the mucous membranes were intensely congested. The mucous collected so much in the trachea that the rattling breathing could be heard as soon as one entered the box. The pulse was rather weak, and the temperature 102.3°. The animal would not eat and had difficulty in drinking. He had a loose cough, which at the same time caused the abdominal muscles to contract and seemed to indicate general muscular soreness. The wound looked well and showed no evidence of swelling. At midnight the temperature had risen one degree, the breathing was somewhat shorter and weaker, pulse rather intermittent, lungs clear. Stimulants and quinine were prescribed. The stimulants regulated the pulse fairly well, but the temperature remained at 103.3° for the next twenty-four hours. No swelling had appeared up to this time, although more than forty-eight hours had elapsed since the operation.

On the third day following the operation the scrotum began to swell and in a few hours the swelling had continued up the scrotum and over the groin. There was no discharge but the part was hot and tense and pitted on pressure. The temperature was 104°. Pulse of good volume, 65. Respirations quickened. Mucous membranes of nose very red. Trachea contained a considerable amount of mucous. Weak, loose cough.

On the fourth day the temperature rose to 105 4°, and the animal became very weak. The lower subcutaneous suture was removed and the partially united edges of the outer wound opened, which allowed the escape of about half an ounce of bloody pus. This relieved the animal somewhat and the temperature fell in the course of three hours three-fifths of a degree.

On the evening of the fifth day, however, it was swollen more than ever, temperature 106°; pulse weak. The subcutaneous wound was laid open to the top of the scrotum and fully two ounces of fluid, mostly blood with some pus, escaped. The cavity was washed out with carbolic acid and warm water, 1 to 60. The edges of the ring could be easily felt adhering firmly and the stitches were all in place and tight.

The following morning the temperature was 103°, and much of the swelling had disappeared. Continued irrigation three or four times a day was ordered. The wound did well from this time on. The mucous in the trachea gradually cleared up as the animal gained strength.

At the end of the second week, for some unexplainable reason, the temperature suddenly rose from 102° to 105.3°. The pulse was quick but full. The animal had a short dry cough, refused to eat and became greatly prostrated. In short, he presented all of the symptoms exhibited by people when attacked by the grip. There was no concealed pus, for everything was draining perfectly. This condition lasted for about a week before he appeared to feel like himself. It may be said that the weather had been very changeable during this time and some of the days were very cold. The floor was very damp in spite of all the bedding which could be piled in. A wooden floor was laid finally, which made the place much more comfortable.

At the end of the third week the swelling had nearly all disappeared. Stitch abscesses had formed, the stitches were pulled out and the union of the walls of the ring was perfect as far as could be ascertained by the sense of touch. He was sent out for exercise at the halter for about an hour. He felt well. The next day he was given a little more exercise, and the third day he was given about three hours, as it was intended to send him home by the end of the week.

When I saw him in the afternoon of the third day I noticed a little swelling in the front part of the ankle of the hind leg on the side operated upon. By evening it was swollen considerably and very hot and painful. The next day the hock began to swell without any continuation of the swelling from the ankle up the leg. There was no swelling in the scrotum and drainage seemed to be perfect. His temperature went up to 104° on the second day after the swelling appeared. Rheumatic arthritis was diagnosed and salicylates were prescribed, with the application of acetate of lead and opium to the parts. Hand rubbing was afterward ordered and instructions how to rub were distinctly given.

These instructions were not carried out properly and resulted in inflaming the skin so that it grew worse instead of better.

He finally recovered sufficiently to go about without any lameness or stiffness and he was led to his home, twelve miles from the city, where he arrived as fresh, apparently, as when he started.

Under the daily application of salicylic acid and oxide of zinc ointment, the irritation of the skin had subsided and the swelling disappeared.

On the 8th of April he served a mare twice inside of five minutes, the second time making a very close cover.

CONCLUSIONS.

1. It would be well to perform such an operation as the above under antiseptic precautions if possible.
2. The animal should have been placed in a warm, dry box.
3. Under the circumstances he should have been allowed to rise immediately the operation was finished.
4. He should have been allowed to lie down on the third day after the operation, at any rate.

ACUTE NEPHRITIS IN MULES.

By W. H. Dalrymple, M.R.C.V.S., Baton Rouge, La.

On the 8th of March we were requested by letter to visit one of the large sugar plantations along the Mississippi valley in this State to investigate what the owner termed a peculiar disease among his mules, five of them having died and eleven or twelve suffering.

Being somewhat suspicious of an outbreak of a contagious character, we proceeded at once to the place, and the following were the most prominent symptom presented by the sick animals: Lassitude, emaciation, staring coat, slow pulse, visible mucous membranes pale, extreme tenderness over the region of the kidneys, thirst, loss of appetite, frequent urination (was informed by the attendant that the urine passed by the mare mules, more particularly those most advanced in the disease, was observed to be tinged with blood); dragging gait with hind limbs, as if the act of carrying the limbs forward produced pain.

We diagnosed acute nephritis and our suspicions rested on the food or water as the probable cause.

The water from a shallow well in close proximity to the sugar house and other buildings was suspected by the owner, and he afterwards watered the animals from the Mississippi river, which runs close past the plantation. We carefully examined the food in the stable (oats and peavine hay) which seemed of good sound quality. After numerous interrogations, however, as to feeding on damp or mouldy hay at any time within the last few months, we had presented to us by the stableman a sample of dark colored and gray mouldy peavine hay, and was informed that for two months previous they had been feeding it to the mules.

We had the opportunity of making a cursory autopsy on one of the mules that had died the night before our arrival. All the internal organs appeared healthy except the kidneys, to which our attention was more especially directed. Each gland weighed *about* six pounds (we could only procure weights sufficient to weigh three pounds at once, and each half of each kidney weighed *about* three pounds).

On opening we found a lightish yellow gelatinous fluid in the pelvis. The cortical portion presented streaks of congestion and numerous small abscesses containing pus, scattered over the cut surface.

We are of the opinion this disease originated probably as polyurea caused by the damaged hay and presumably assisted by the water, and that the exciting cause being kept up and the diseased condition allowed to go on unchecked, resulted in suppurative hephritis; at all events in the subject of our post-mortem examination.

The treatment prescribed for the twelve affected mules was

℞ Iodine, Grs. xx.
Potas. Iodid, ʒi.
Aqua, oi.
Sig.—Twice daily.

Mashes of wheat-bran and boiled linseed. This was continued for about eight or ten days.

We had not an opportunity of paying a second visit, but from the last accounts (April 6th), the animals were much better and improving every day.

We append a partial analysis of both the water and hay which may be of interest.

WELL WATER.

Total Solid Matter, - - - 44.9 grs. per gal.
Organic and Volatile Matter, 14.05 " " "
Ca. Mg. Fe. (Trace.) K. Na. Cl.
$H_2SO_4P_2O_5CO_2$

PEAVINA HAY.

Fungus containing mineral matter, phosphates and sulphates of Ca., Na. and K.

A small portion of the hay in a sugar solution produced butyric fermentation.

A DOUBLE MONSTROSITY OF A CALF TRACEABLE TO INJURY OF ITS MOTHER.

By Prof. Olof Schwarzkopf, V.M., University of Minnesota.*

Early in October, 1890, David Porter, in charge of the cattle barn of the Minnesota Agricultural Experiment Station, called me to see a Holstein-Friesian cow which was hit by the horns of another cow, a noted fighter, while passing into the stables. I found the cow very nervous and excited. On the right flank behind the last rib and about one foot below the loins was a small bruise, about as large as a fifty-cent piece. As the cow was with calf, I auscultated the uterus, but could find nothing abnormal. I instructed the man to keep the cow in a quiet place and to watch her, as she might possibly abort; however, she soon seemed all right, and nothing further was thought of the case.

On January 28th, 1891, the cow dropped a calf. As it did not have any passages within two days, the cattle-man gave it a dose of castor oil, which had no effect. He then reported it to me, and also stated that the calf seemed to be crippled. In looking at the calf I observed that it had a curved spine, and further examination revealed that there was no rectal opening.

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* From Bulletin No. 19 Experimental Station of University of Minnesota.

I had the calf sent over to the veterinary hospital, and on February 2, 1891, examined it. An incision was made where the natural opening should be, but after perforating the skin no rectum was found, but a direct entrance into the abdomen. The intestines that lodged in the pelvic cavity apparently were the colon or cœcum. I tried hard to find the rectum, but did not succeed. On February 3d the calf, which was greatly emaciated, died. The post-mortem examination showed the following:

On opening the abdomen an irregular situs of the intestines was first to be noticed. In removing the intestines I found the rectum near the liver, ending in a blind sack, curved and possessing a kind of nodule, resembling somewhat a cicatrix. After the removal of the intestines the curve of the spine to the left was very apparent, and the left kidney was very small and situated on top of the right kidney. The other organs were normal. The calf certainly could not have lived.

The practical conclusion that must be drawn from this case is that the abnormalities which the calf presented were produced by external injuries. Critics may object and say that the skin and the membranes of the uterus are so thick that a cow's horn cannot touch the fœtus. This may be true as a rule, but by any one that had examined this case, together with its history, no other conclusion could be reached than to ascribe the cause of the abnormalities of the calf to the blow which its mother received four months previous to the birth.

I am not at all blindly devoted to dehorning cattle; on the contrary, being a lover of pure types and natural forms, I have always maintained that it is a violation of the laws of ethics and æsthetics to disfigure a beautiful Jersey cow by dehorning. But the principles of ethics are often violated in the cow stable and barn-yard, and I confess that I am also convinced that it is a righteous and humane act to take horns off—at least of those cows that cannot keep peace with their fellow creatures.

EXTRACTS FROM GERMAN PAPERS.

By Richard Middleton, D.V.S., Philadelphia, Pa.

COLIC INDUCED BY TORSION OF THE COLON.

Jelkman first communicated the possibility of diagnosing and treating a colic induced by torsion of the colon. Prof. Mœller has also lately proven the same to be practicable, and narrates his experience in two cases herewith appended.

He destroyed horses and maintained them in the upright position; he then removed that portion of the left abdominal wall embraced between the last rib, external angle of the ileum, and the transverse processes of the lumbar vertebræ. Pursuing such a method enables one to observe the movements of the hand in the rectum, and makes it possible to assert unquestionably with what part it comes in contact. The position in which the longitudinal muscular bands of the lower bowel are thrown, is remarkable, and furnishes a means of determining the direction of the torsion.

The method of correction of such a torsion is as follows: Carry the hand forward in the rectum and well to the left; circumscribe the colon and bring it toward the median line, at once and carefully moving the hand toward the spine. Following this last motion the intestine falls back in its normal position and the aggravated symptoms cease.

Mœller communicates two cases which came under his personal attention. In one of these he distinguished from the rectum the longitudinal muscular bands of the colon, to the left of the median line, leading from the postero-external portion of the body in an antero-internal direction. He followed the course prescribed above, pressing the colon backward and to the right; immediately the gas which had been imprisoned in the pelvic flexure escaped and the colic subsided.

In the second case the colic had lasted twenty hours; the pelvic flexure was filled with gas and easily reachable per rectum. The longitudinal bands were diagnosed as in the previous case. By great exertion it was possible to propel this portion of the bowel toward the mesial line, whereupon the threatening symptoms ceased.

Malkums also communicates a case in which this method proved very beneficial. The distended condition of the bladder and the contracted state of the rectum rendered it imperative to catheterize the former and irrigate the latter. Cold water clysters effect a neutralization of these annular contractions much better than warm.

Mœller further states that much patience is necessary, and considers all exercise, either walking or faster, as dangerous. —*Monatshift. f. Thier.*

POST PARTUM HEMORRHAGE.

We were called by Mr. A———to see a young heifer that had just calved. The history related indicated that the act of parturition had consumed little time, and had been completed by the aid of a few men. It was difficult to deliver the head of the calf, and immediately subsequent to this performance an immense quantity of blood escaped the vulvular opening. Upon our arrival we found a small pool of blood behind the animal. She appeared to be exhausted and evacuated at each contraction a stream of blood two inches in diameter. Manual examination revealed a wound of considerable size, which embraced the vagina and superior commissure of the vulva. The hemorrhage ceased in five minutes after the injection of liq. ferri sesquichloride solution, which we made up from medicines which we happened to have with us.

℞ Liq. Ferri Sesquichlor., ℥ i,
Aquæ, cjs.
M.
Sig.—Make one injection.

After ridding the uterine cavity of collected blood by irrigating with water containing alum, we cauterized the wounds with a 10 per cent. carbolic solution (suturing being out of the question).

After partaking of bran water and moistened bread sprinkled with salt, the patient became tranquil. Five hours after our departure the membranes were ejected in a physiological manner, but nothing extraordinary or malformed could be detected. Pieces of ice were introduced within the vaginal cavity as an adjunct to the carbolic solution in preventing inflammatory complications.

The after-pains which usually are induced by wounds of this nature were almost if not quite wanting. On the second day the animal's condition was satisfactory, though pyrexia and anorexia were present in an insignificant degree and were no doubt referable to the pain.

After a fresh application of the carbolic solution, we used a prescription recommended by Wredens, and to whose efficiency we owe so much success in the treatment of fluor albus (leucorrhœa). This is very simple and consists of the following ingredients:

℞ Acidi Salicylici, ʒ v,
Alcoholis, ℥ vi.
M.

Sig.—Externally. Two tablespoonfuls of water as an injection, t. i. d.

This same author recommends for the same disease one tablespoonful of alum in one quart of water, to be used at one injection.

For the purpose of injecting these fluids we attached a large funnel to the end of a long flexible catheter.

Throughout ten days this procedure was continued, and after that, dilute creoline solutions were made twice daily. We believe the salicylic acid to have been much better borne than the creoline; but whether this was due to less pain induced, we leave our readers to judge.

The thin scab of the cauterized surface was gradually desquamated, and in about three weeks the case was discharged.—*Berl. Thier. Woch.*

COMMERCIAL MANIPULATION OF MILK.

To the Society for the Protection of the Public Health, in Liepzig, Prof. Soxleth contributed an article upon the commercial manipulation of milk, which in substance is as follows:

"The milk of the whole dairy should be mixed before being sold; and above all, never should the product of a single cow be used as nourishment for a child. The addition of water does not alter the quality of the nutritive principle contained in the lactic product. This is, however, not the case if the cream be removed therefrom. Pure milk deficient in fatty substance is not similar to skimmed milk containing the same percentum of setaceous matter.

"The dietetic worth of the milk is influenced by the addition of impurities, *i. e.*, adulterations, as is frequently observed in milk dispensed to the public at the present day.

"The bacteria generated in the polluted milk may operate malignantly upon the digestive apparatus; and through their product or exhalation may induce conditions deleterious to the constitution. The character of the milk as a food is greatly affected by the presence of these micro-organisms. Complete purity of the milk cannot be expected. By centrifugal force the impurities may be removed, and the milk be preserved longer, if the cooling be undertaken immediately subsequent to the milking. By means of sterilization and cleanliness, decomposition is retarded, and very materially aided if chilled and centrifugated milk be used. Strong polution (adulteration) makes sterilization impossible. Only sterilized milk should be given to children at the breast, and t is very evident that this operation may not be left in the charge of strangers.

"That the milk should be fresh daily and that it should be terilized is of fundamental importance, when the same is inended for sick or for children."—*Th. Wocherschrift.*

EXTRACTS FROM ENGLISH JOURNALS.

A PERINEAL TUMOR.

By T. Hibbard, M.R.C.V.S.

On Thursday the 14th inst., a skye terrier bitch was brought to me suffering from constipation, and with a hard swelling in the perineal region. On examination per rectum and per vaginam I found two tumors situated between the rectum and the vagina, embedded in the connective tissue and apparently having no adhesion to either of the importan structures in such close proximity. I explained the nature of the obstruction to my client and he decided to let m operate.

On the 15th I chloroformed the animal, and made an in cision in the superior commissure of the vulva. I then inserted my finger and thumb and removed four tumors, varying fro the size of a marble to that of a duck's egg; and togethe weighing four and three-fourth ounces. They were attached t the connective tissue and appeared to be fibromas.

The bitch remained in my charge until Tuesday 19th and got better, although she refused all food except a smal quantity of milk. The owner upon my advice moved he and after about three or four days she began to feed bette I saw her to-day (26th) and am pleased to say she is gettin well rapidly, the wound being perfectly healthy and the bitc quite lively, no further visits being necessary.—*Veterinar Review.*

DISINTEGRATION AND ABSORPTION OF MEDICINAL AGENTS.

By Joseph H. Manton, M.R.C.V.S.

I fancy the incident I now record will not be devoid interest to your readers—the circumstance of two med cinal balls being found, in an unchanged state, nearly twelv hours after being administered. I attended the followin case in the practice of Mr. Roalfe Cox. About 8 P. M. dray horse was discovered in abdominal pain, when the for man horse-keeper gave, in accordance with his usual custo two balls, each containing ammon. carb. ʒii. About midnight the horse, getting worse, was first attended by me, the pain very severe—sitting on haunches. On my examining per rectum, I found the bowel so tightly contracted that I could not introduce my hand more than six or eight inches. He died about 7 A. M., eleven hours from the time of swallowing the two balls.

The post-mortem showed part of the third portion of the colon highly discolored, as occurs in strangulation, but I did not discover a lesion occasioning it. The stomach was so greatly distended by food as to remind one at first sight of the rumen of an ox; and amongst the ingesta of the stomach were the two balls unbroken and still affording the smell of ammonia.—*Ibid.*

RUPTURE OF THE BLADDER IN A COW.

By Jos. Kirk, M.R.C.V.S., Stewarton, N. B.

On January 20th I was called on by a workman from a farm about three miles distant to go and see a cow that required cleansing, "and that she was down, lifting and groaning badly." The owner, who is also a cattle dealer, was in Arran at the time and I obtained the following history from his wife:

The cow was bought a month before and was due to calve at the end of February; thus parturition took place fully a month beforehand; the calf was born dead but labor was easy. She seemed all right, and was milking well till the third day after calving, when she lay down, ate nothing, lifting at the flank with frequent moans. On examination I found her to be a three-year-old quey, first calf, and in fair condition; pulse quiet and weak, temperature 90° F.; about two feet of cleansing hanging from the vagina; labored breathing with frequent moans, eyes dull and sunken, turning her head towards the flank, trembling of all the body at intervals; had passed no urine for a day or two. On attempting to raise her she was not fit to stand upon her feet and fell. I removed the placenta and syringed the uterine cavity with a warm diluted solution of Jeyes' fluid, passed the catheter but obtained no urine, administered stimulants combined with tinct. aconite but with no result. As I had a visit to make about a mile further on I promised to call on my way back. On my arrival I found she had just died. On making a post-mortem all parts of the body in a healthy condition except the bladder, which had a longitudinal rupture of the inferior surface of the fundus about two or three inches in length, involving all the coats; there was a quantity of urine floating in the abdominal cavity. Uterus quite healthy and contained some of the injection I had used.—*Ibid.*

HYDRASTIS IN THE TREATMENT OF NASAL GLEET.

By Capt. F. Smith, Professor in the Army Veterinary School, Aldershot.

The value of hydratis canadensis in the treatment of nasal gleet was not overated by Messrs. Edgar and Hurndall. It may be within the recollection of your readers that the members of the Southern Counties V.M.A. were recommended by the former gentlemen to try the drug, and I at once, through the kindness of Prof. Edgar, employed it in the treatment of a case of ozœna.

The horse had been previously trephined, the maxillary sinus being opened in two places, one on the zygoma close to the eye, the other in the usual position; the head was syringed out with a mixture of hydratis 1 to 6 of water twice a day, and ten drops of the tincture given with the drinking water. At first the discharge was so much increased that I should have stopped the use of the remedy but for the timely warning of Mr. Hurndall, who told me that this effect would be produced; for the first month there was not much improvement, but after this the case daily grew better, the discharge ceased, and I allowed the wounds in the head to close; the horse was discharged to duty in six weeks.—*Ibid.*

A QUINTUPLE CONCEPTION.

By Thos. Horton, M.R.C.V.S.

A rather extraordinary case occurred in my practice about ten days ago. I was called to see a cow which was down and could not rise. I found her weak and emaciated (she had been poorly fed) but not showing any signs of acute disease. When got on to her feet she was not at all distressed, and ate and drank well.. I gave tonics and good food, but she gradually got worse and we could not get her up at all, and the owner decided to have her killed, which was done. On opening her it was found that the uterus contained five calves, all well developed and in a natural condition, considering the cow had about ten weeks to go. The color of each was easily distinguishable, they were very level in size, and each about as big as a small collie dog. I do not remember ever hearing of a case where there were so many as five calves at one time in a cow. They looked so very healthy that I believe they might have been brought forth in a natural manner if the cow had been sufficiently well cared for during the winter.—*Ibid.*

DRY CHOKING.

By J. McGavin, M.R.C.V.S.

I was called to an aged draught horse which had been brought from the field that day, and had received a feed of oats and chaff. He was a greedy feeder, and his molars were faulty. He stopped eating when half through his feed, saliva flowed from his mouth, he made unsuccessful attempts to swallow, also to vomit, and in doing so gave a half shriek or squeal. Tympanitis set in, and he seemed much distressed; the œsophagus was swollen on the left side, and I diagnosed the case to be dry choking.

As my experience was limited in such cases, and this being the worst I ever had, I taxed all my resources to reduce the obstruction. I rubbed the œsophagus gently and tried to manipulate the mass. Then tried to drench him with emulsions, &c., and after several attempts at drenching he became violent and quite unmanageable. As the horse was close at hand I watched the case for several hours, gave medicated enemas, and relieved the tympany, and after five hours unsuccessful treatment I tried the following: I inserted the needle of my intratracheal syringe into the center of the obstruction and injected cold water into the œsophagus. In the course of half an hour the mass had softened and disappeared, and the horse has continued well ever since.

As I have not heard of any such treatment, perhaps it may be useful to some fellow practitioner who may some day have such another case.—*Ibid.*

EXTRACTS FROM FRENCH JOURNALS.

A NEW TREATMENT FOR CANKER OF THE FOOT.

By M. Lucet.

After having treated one case of this form of disease in a horse affected in both hind feet, and having unsuccessfully employed every form of treatment hitherto recommended, the author devised a final course of operation. On the right foot, the one most affected, the hoof—which was entirely undermined—was removed and the granulation excised as completely as possible, after which a very compressive dressing with an aqueous emulsion of cresyl (one part in three) was carefully applied. After two weeks the dressing was removed, and underneath was found a thick layer of healthy horn. After some time the same course was taken with the other foot and the same result was obtained.

While the author attributes to the cresyl the results secured, is it not probably that the radical operation contributed considerably to the good results?—*Revue de Med. Vet.*

FRACTURE OF THE INFERIOR MAXILLARY.—PURULENT INFECTION.

By Mr. Debrade.

Resulting from a kick received below the temporo-maxillary joint, a mare presented in that region a fistulous tract of the left cheek. The muscles of that side were atrophied, mastication was almost impossible, a discharge of pus and blood escaped from the fistula, which on being probed gave the crepitating evidence of a comminutive fracture of the left branch of the lower maxilliary bone immediately below the condyle, and also of the coronoid process. The fistula was freely opened, the fragments removed, the wound washed with carbolized water, and a dressing of carbolized glycerine applied over the parts. At first everything seemed to go on well and the wound appeared to be progressing favorably toward cicatrization. After a few days, however, alarming symptoms manifested themselves. Fever set in and rapidly increased, the digestive functions were disturbed, respiration was accelerated, breath became offensive, secretions of the wound bloody, and notwithstanding a severe derivative treatment the mare died.

At the post-mortem the condition of the fracture was confirmed. All the internal organs presented interesting lesions. Inoculations to guinea pigs of blood taken immediately after death being followed by negative results proved that the cause of death of the mare was purulent infection and not septicæmia.—*Ibid.*

A NEW CASE OF UNILATERAL PLEURISY IN A MARE.

By Mr. Minette.

The subject was a mare which presented all the characteristic signs of pleurisy on the right side only, with effusion in the lower third of the corresponding pleural sac, viz., absence of the respiratory murmur, bronchial breathing on a level with the lower third of the right lung, dullness on percussion, clicking noise in the right nostril, dyspnœ, convulsive dilatation of the nostrils, short and painful cough, pulse small, intermittent, etc. Graduated counter-irritation was resorted to, with heroic diuretic internal medication. The case was followed by radical recovery in a few days.—*Ibid.*

BIBLIOGRAPHY.

THE DOG. By Professor Wesley Mills, M.A., M.D., D.V.S. New York: D. Appleton & Co.

"The Dog, in Health and Disease," is a new addition to our American veterinary literature. It is contributed by Professor W. Mills, of McGill University, a gentleman already well known by his literary performances, and principally by his work on "Comparative Physiology," which has become a text book in most if not all of our veterinary colleges.

If, however, "Comparative Physiology" has succeeded in winning a success with the students of veterinary medicine, we fear that "The Dog, in Health and Disease," will require a longer time to secure an equal result. This is not because of any inferiority on the part of the book itself, but because it fails to include certain matters which investigators and students in canine pathology would naturally expect to find in a new work which is destined to compete with those of Youatt, Hill, Steele and others, already and so long in vogue.

The author, however, warns us in his Preface that "the book is by no means intended for students and practitioners of veterinary science *alone.* It is meant for all intelligent persons who breed and keep the animal." This deprecatory caution naturally relieves us from the task of further criticism on the Second Part, which forms nearly the latter half of the book

The First Part is very interesting reading. It is constituted of a series of chapters which, starting with the origin and history of the dog, passes through his zoological position and physical characteristics and ends with a classification of those interesting animals through all their various breeds and in their various species. This is followed by a goodly number of pages treating in an able and entertaining manner upon the general canine hygiene and the requirements of dogs in breeding, and a very concise article on the determination of the age of the animal.

The text is handsomely illustrated by nearly forty well executed plates. The publishers' part of the work has been liberally planned and executed, and harmonizes well with the general design of the whole. The volume is nicely bound and handsomely finished, and should be certain of finding a deserving place in every select library.

BACTERIOLOGICAL DIAGNOSIS. BY JAMES EISENBERG, Ph D., M.D., Vienna. Translated by N. H. Pierce, M.D., Chicago, Ill. Philadelphia: F. A. Davis Co.

Every medical student, whether beginner or in an advanced class, or graduate, old or young, whose determination it is to keep posted in his studies with the progress made during the past few years in bacteriology, must have read a great deal upon that subject, and at the same time must have regretted that lack of time has prevented him from mastering all that has been written and published, or found himself unable to apply to practical use all that he may have learned. The science of bacteriology is so complicated; the demonstrative work sometimes so difficult to execute; the possession of a laboratory, however small, so expensive, and the printed and published matter pertaining to biological and allied subjects so voluminous, and the related diseases so diverse and so numerous, and indeed the whole subject so large, that it cannot be considered surprising that, after all, the domain of bacteriology has remained unvisited by so many and thoroughly explored by so few, and that it has had so few really enthusiastic and hard-working explorers.

But this condition of things may be considered as measurably, at least, abolished. "Bacteriological Diagnosis," with its 137 tables, and the Appendix which follows them, on the technique employed in the cultivation and staining of bacteria, has relieved the subject of many of its difficulties, condensing as it does in illustrative plates, and in a few lines and even a few words, the characters which belong to the non-pathogenic and pathogenic bacteria, and to the fungi. Each table gives for each individual the place where it is found, with its form and arrangement, motility, mode and rapidity of growth, of temperature required, spore formation, ærobiosis, gas production, gelatine reaction, color production, and pathogenesis; representing, in fact, almost at a glance, every interesting point in the life and power of the bacteria, so that it may be found and confirmed by a little attention and application.

The book may have been written principally for medical men, but there are many in the veterinarian ranks who, we feel certain, will find in the reading of "Bacteriological Diagnosis" many points of interest and instruction, as well as of practical utility.

We urgently recommend the work to our brethren for their study and appreciation.

PRAPARIERMETHODIK. By Dr. Rudolf Lothes, Berlin. Berlin: Richard Schoetz.

This is an excellent little anatomical guide, prepared by Dr. R. Lothes, Demonstrator to the Veterinary School of Berlin, giving directions in the various steps to be followed in the dissection of the equine cadaver.

The preparation of the muscles, joints, viscera, arteries and nerves are concisely and clearly presented to the reader—the nervous and circulatory systems being illustrated by shematic plates, which render the subject more readily comprehensible to the student than long verbal descriptions.

We have no work like this in any other language, and it is to be hoped that some of our friends familiar with the German language will translate "Prapariermethodik" in such form as to make it a classical book for our students—adapting it, however, to the text followed in our English works on equine anatomy.

COLLEGE COMMENCEMENTS.

McGILL UNIVERSITY VETERINARY DEPARTMENT.

The Wm. Molson Hall, McGill University, was the scene of a most interesting and brilliant gathering. The occasion was the annual convocation of the Faculty of Comparative Medicine. A large number of friends and relatives of the graduate sophomores and freshmen were in attendance, together with a large number of "undergrads," to do honor to the graduating class of 1892.

Punctually at 3 o'clock Mr. J. H. R. Molson took the chair and was supported by Vice-Chancellor Sir Wm. Dawson and Mr. W. C. McDonald.

Among others on the platform were the Dean, Dr. Duncan McEachran, Dr. C. McEachran, Dr. Bryden, Boston; Dr. Gadsden, Philadelphia; Dr. Craik, Professor Mills, J. Redpath Dongal, Rev. Geo. Cornish, LL.D.; S. Finlay, Professor McLeod, H. Watt and J. W. Brakenridge, B.C.L.

The proceedings opened with prayer conducted by Rev. Dr. Cornish.

The Dean of the Faculty, Dr. D. McEachran, read the twenty-sixth annual report of the Faculty, at the close of which the following prizes were handed to the successful students by the chairman:

Veterinary medicine and surgery, Joseph Plaskett. Anatomy, J. D. McIntyre. Diseases of cattle, J. D. McIntyre. Cynology, D. L. Bolger. Zoology, C. French. For the best general examination on all subjects, silver medal, J. D. McIntyre.

Extra prizes.—For the best essay read before the Veterinary Medical Association; 1st. D. L. Bolger, $15; 2d. G. P. Wells, $10; 3d. J. H. Seale, $5. For the best essay read before the Society for the Study of Comparative Psychology, book, G. P. Wells. Scholarship, $50—For the highest aggregate obtained in second year subjects, Wilfred Plaskett. Scholarship, $50—For the highest aggregate obtained in first year subjects, C. French.

The degree of D.V.S. was conferred on the following students by Principal Sir Wm. Dawson, assisted by the Dean, Dr. D. McEachran: J. D. McIntyre, R. A. Ramsay, J. Plaskett, D. L. Bolger, George Lee, G. P. Wells, J. Moffatt, A. T. Robertson, D. McNaughton, G. Gangloff, R. E. Dyer, E. Robb, J. H. Seale, S. J. Moffatt, T. B. Pote, O. C. Lofgren.

The valedictory address on behalf of the graduates was then delivered by Dr. R. A. Ramsay, of Eden Mills, Ont., one of the new "Vets." The valedictory was remarkably well delivered and elicited well deserved applause from the large gathering.

Dr. C. McEachran, D.V.S., next delivered an address to the graduating class. Sir. Wm. Dawson followed with a few words of congratulation and encouragement. He hoped that ere long fresh quarters would be assigned to this most important faculty, and expressed his good wishes for the success of the class of '92.

ONTARIO VETERINARY COLLEGE.

The last annual commencement exercises of the Ontario Veterinary College were held in the lecture theatre of the college on Temperance Street. The chair was taken by Dr. Andrew Smith, principal of the institution, among those supporting him being Hon. John Dryden, Minister of Agriculture; N. Awrey, M.PP., President of the Agriculture and Arts Association; Dr. Daniel Clark, Hon. Thomas Ballantyne, Speaker of the Legislative Assembly; Rev. D. J. Macdonnell, Dr. Thorburn, Dr. McMahon, M.PP., William Christie, Rev. Dr. Briggs, Henry Wade, Secretary of Agriculture and Art Association; Inspector J. L. Hughes, Ald Score, Mayor Lloyd, Newmarket and others.

In opening the proceedings Dr. Smith stated that this was the twenty-second anniversary of the institution, and the closing session had been one of the most successful in its history, during which students to the number of 350 had been present from all parts of Canada and the States, and even from the United Kingdom. He called upon the Secretary to read the prize list, which was as follows:

GRADUATES.

Richard Henry Alexander, Stathroy; James L. Armitage, Lucan; James M. Armstrong, Locust Hill; George Beacon, Clinton; Wm. J. Badgley, Collamer, N. Y.; Wm. H. Barry, Omagh; Howard L. Baum, Shelly, Pa.; Wm. G. Birdsall, Peterboro'; Charles N. Blanshard, Appleby; J. H. L. Blattenberg, Smithville, Ohio; Samuel D. Bodle, Mecklenburg, N. Y.; Farra L. Botkin, Union Port, Ind.; Alex. G. Bowker, Norfolk, Eng.; Robert L. Bradley, Louisville, Ky.; Fred. Bragington, Crown Point, Ind.; T. H. Buckingham, Elkhorn, Man.; Phillip G. Button, Crasco, Iowa; L. C. Brewster, Belleville; Asa A. Brown, Toronto; Fred. C. Brown, Rodney; Hosea B. Crandall, Syracuse, N. Y., Alva B. Car-er, Brocton, Ill.; William S. Cass, Raymond, Ill.; Edward M. Clarke, Bishop, Cal.; Nathaniel Clark, Mount Brydges; Richard Coghlan, Strathroy; Robert Colgan, St. Catharines; Horace H. Collins, Obold, Pa.; Samuel A. Coxe, Brandon, Man.; A. H. Crane, London; Samuel R. Craver, Warren, Ohio; David W. Curtis, Listowel; Ashton B. Cutcliffe, Mohawk; Harry R. Church, Luzerne, Pa.; Charles H. Daniels, North Adams, Mass.; L. Enos Day, Concordia, Kansas; Gravier G. Dean, Tully, N. Y.; David C. Detwiler, Ironbridge, Pa.; James S. Elliott, Gosport, N. Y.; John J. Elliott, Wingham; C. H. Erganbright, North Salem, Ind.; Peter M. Fisher, Georgetown; E. D. Fisher, Skaneateles, N. Y.; Ernest Foreman, Jr., Whitehall, Ill.; R. H. Fortune, Vesta; Harry Fulstow, Greenwich, Ohio; Leslie A. Gemmel, Islington; Andrew D. Gemmill, Wingham; Samuel Goldsmith, Reading, Pa.; James H. Gregory, Danville, Pa.; John W. Griffith, Pitpon, Iowa; George E. Grover, Chatham; John S. Grove, Nimisila, Ohio; Adolphus W. Guest, London; Peter F. Gaunt, Kinkora; Alfred T. Goldie, Corunna; William J. Hallock, Danby, N. Y.; William F. Harding, New Milford, Pa.; Leonard G. W. Hart, Eau Claire, Wis.; Henry J. Hellwig, Elliston, Ohio; James H. Hester, Hastings, Nebraska; Harry E. Hurd, Brockville; Benjamin F. Huston, Cortland, Neb.; Henry H. Hawley, Niagara Falls, N. Y; Wilfred T. Hart, Ravena, Ohio; Frank A. Ingram, Springfield, Mass.; Thomas W. Johnston, L'Amaroux; T. E. Jago, Rockwood; Frank C. Jervis, Cambridgeboro, Pa.; John L. Kolander, Pewaukee, Wis.; William Kinney, Cedar Valley, Ohio; George Kesler, McKeesport, Pa.; E. G. Kriebel, Hereford, Pa.; C. W. Ruhn, Mercersburg, Pa.; Thomas J. Lawson, Logoch; William J. Lawson, Cherrywood; Louis D. Le Gear, Inlay City, Mich.; Michael Little, Pilot Mound, Man; John H. Lipsett, Brandon, Man.; Kenneth J. McKenzie, Northfield, Minn.; Thomas McFarlane, Ottawa; Frank H. McCarthy, Pottsville, Pa.; Thomas W. McConnell, Moline, Mich.; Daniel McCuaig, Bristol, Que.; T. F. McEvers, Chicago, Ill.; Ashton D. McKenney, Watertown, S. Dak.; J. H. McLevey, Florence; Wallace McQueen, Simcoe; John E.

Miller, Greenville, Texas; George W. Milligan, Faribault, Minn.; Wm. Mock, Easton, Pa.; Harvey Campbell Moore, Deer Park; John O. Moore, Durham; Robert J. Morrison, Detroit, Mich.; Charles M. Noble, Monticello, Iowa.; E. H. Nodyne, Rochester, N. Y.; John H. O'Brien (M.D.), Rochester, Pa.; Geo. W. Orchard, Strathroy; Wm. H. Orth, Wallaceburg; David C. Papworth, Syracuse, N. Y.; Walter J. Payne, West Walworth, N. Y.; Wm. O. Penney, Louisville, Ky.; M. B. Perdue, Orangeville; James Pickel, St. Mary's; J. W. Poole, Crystal City, Man.; Robert Rives, Greenfield, Ill.; Thomas E. Robinson, Glastonbury, Conn.; Henry Roome, Croydon, England; Joseph Routledge, Lucan; Henry Alfred Rudd, Dublin, Ireland; Ellerton A. Richardson, Strathroy; Joseph S. Schofield, Naugatuck, Conn; James L. Savage, Chesley; Joseph P. Sherman, Detroit, Mich.; Wm. A. Shoults, Portage la Prairie, Man.; Wm. H. Simmons, London, Eng.; Fulard C. Smock, Carlonville, Ill.; Samuel Somerville, Buffalo, N. Y.; Warren E. Stocking, Eagle Harbor, N. Y.; Frank W. Swearingen, Decatur, Ill.; James L. Smith, Strathroy; Thomas Tinder, Cork, Ireland; Richard W. Tuck, Elgin, Ill.; Joseph W. Turner, Uxbridge; John S. Thompson, Darlington, Wis.; J. N. Umphrey, Udora; James A. Wake, Moosomin, Assa.: Walter Warren, Windsor, Mo.; J. Will Watson, Peru, Ind.; Robert H. Watson, Chicago, Ill.; Benjamin F. Wingard, Bryan, Ohio; Thomas C. Wallace, Jamestown, N. Y.; Ben. P. Wende, Millgrove, N. Y.; Thomas C. Young, Bristol, Que.; William G. Zimmermann, Smithville, Ohio.

A large number of prizes were then delivered, which were followed by addresses from Hon. Thos. Ballantyne of the Legislative Assembly; the Minister of Agriculture; Mr. Avery, President of the Agriculture and Arts Association; and Drs. McMahon, Clark and several others.

OHIO VETERINARY COLLEGE.

One year ago yesterday was organized the Ohio Veterinary College, and last night the same institution graduated sixteen young men.

The exercises were held in the college rooms, 135 Sycamore Street, and were attended by many prominent horsemen and their families. For the first annual it was a pronounced success, and the Faculty look forward to the coming year with pleasurable anticipation. Dr. A. H. King, Dean, opened the meeting with a history of the organization, which was put upon a sound basis through the support, financial and otherwise, of Messrs. Frank Fox, Thomas Mead, W. W. Symmes and others interested in the welfare and comfort of the noblest of animals.

Thomas Downing delivered the valedictory address, and W. R. Howe, V.S., the Faculty address. Hon. W. W. Symmes, President, conferred diplomas on the following: J. H. Young, Belvidere, N. Y.; W. E. Sage, Churchville, N. Y.; D. B. Cliff, Upper Sandusky, O.; P. O. O'Rear, North Sabin, Ind.; A. L. Kimbro, Centerville, Ky.; John Dorn, Pittsburg, Pa.; G. W. Cliff, Upper Sandusky, O.; Thomas Downing, Washington, Ia.; H. Emery, Clarion, Pa.; Chas. Phillips, Maquoketa, Ia.; Emil Pohl, Buffalo, N. Y.; H. C. Ayers, Williamsville, N. Y.; E. E. Terry, Ashtabula, O.; D. P. Webster, Brookport, N. Y.; S. A. Coppess, Ansonia, O.; John S. Bransen, Indianapolis, Ind. A. L. Kimbro received a gold medal for best general average.—*Cincinnati Commercial Gazette.*

SOCIETY MEETINGS.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The Pennsylvania State Veterinary Medical Association convened at 10 A. M., March 8th, 1892, in the hall of the College of Physicians and Surgeons, Philadelphia; President Kooker in the chair.

On roll call the following members answered to their names:

Drs. Kooker, Lusson, Hart, Harger, Zuill, Webster, Hoskins, Jas. B. Rayner, Thos. B. Rayner, Geo. B. Rayner, John B. Raynor, Keil, George, Gladfelter, Glass, Foelker, Knight, Custer, J. Curtis Michener, Robert Formad, Good, Heller, Collins, Rectenwald, Meyer, Ross, John J. Smith, Werntz, Francis Ridge, Kuhn, Diemer, Magill, Williams, Schrieber, Ridge, Heelor, Bachman.

As delegates: Dr. A. T. Sellers, of the Keystone Veterinary Medical Association; Dr. W. H. Ridge, of the Philadelphia Veterinary Society; Dr. W. B. E. Miller, of the Veterinary Medical Association of New Jersey.

As visitors and applicants for membership: Dr. John Marshall, Dean of the Department of Veterinary Medicine of the University of Pennsylvania; Dr. William Dougherty, of Baltimore, Md.; Dr. E. O. Shakespeare, Philadelphia; Drs. J. H. Oyler, B. F. Senseman, H. Walters, Harry Entmen, Leonard Pearson, W. T. Edwards, Lewis I. Bloom, J. C. Bartholomew, A. R. May, Wm. Tagg. Mr. Teufel, of Philadelphia, veterinary instrument maker, was also present.

The minutes of the semi-annual meeting followed, and were adopted as read.

Election of officers followed, and resulted in the following choice:

President—W. Horace Hoskins, Philadelphia.
First Vice-President—Thos. B. Raynor, Philadelphia.
Second Vice-President—R. G. Webster, Media.
Third Vice-President—Z. S. Keil, Perkasie.
Recording Secretary—Robt. Gladfelter, Philadelphia.
Corresponding Secretary—W. H. Ridge, Trevose.
Treasurer—John R. Hart, Philadelphia.

Board of Trustees—W. S. Kooker, W. L. Zuill, S. J. J. Harger, Jas. B. Rayner, J. Curtis Michener.

Professor R. S. Huidekoper, of New York, was elected an honorary member, having removed from his native State.

The following names being favorably recommended by the Board of Trustees, were duly elected to regular membership:

Dr. Wm. Tagg, Vet. Dept. of U. of Pa., Philadelphia, Pa.
“ B. F. Senseman, Vet. Dept. of U. of Pa., “ “
“ Leonard Pearson, Vet. Dept. of U. of Pa., “ “
“ W. T. Edwards, Vet. Dept. of U. of Pa., Clearfield, “
“ J. C. Bartholomew, Vet. Dept. of U. of Pa., Phila., “
“ J. H. Oyler, Ontario Vet. College, Harrisburg, “

Dr. Lewis I. Bloom, of Curmusville, Pa., was unfavorably reported, failing to pass a satisfactory examination.

The charges pending against Dr. G. Meyer, of Allegheny, Pa., were laid over until the September meeting.

Under reports of committees, Dr. W. Horace Hoskins, as Chairman of Legislative Committee, made a brief report on the prosecutions being made in Allegheny County.

Dr. W. L. Zuill, Chairman of the Committee on Sanitary Science and Police, made an unusually complete and exceedingly interesting compilation, covering the entire ground of that committee's field.

Notice was given by Secretary Hoskins of the next meeting of the United States Veterinary Medical Association at Boston and the international meeting at Chicago, 1893, and a cordial invitation was extended to all.

At this period of the session a recess was taken, that the entire body present might accept the hospitality of the Department of Veterinary Medicine of the University of Pennsylvania at a bounteous lunch served at Boothby's. The spread was one of very generous proportions, and was most thoroughly appreciated by all present and brought forth a hearty vote of thanks to the Department.

The following members' names were dropped from the rolls for non-payment of initiation fees and dues: Drs. L. E. Wheat, A. Maurise, W. M. Brodhead, C. E. Bridge.

It was decided, after some discussion, that the next annual meeting shall be of at least two days' duration.

Letters of regret were received from Drs. D. E. Salmon, A. Liautard, Claude Morris, B. F. King, H. B. McDowell, E. A. Grange, and members Turner, Timberman, Hoffman and Magee.

A communication from E. S. Bausticker was read.

Papers being now in order, a paper on Laryngotomy, by Dr. S. J. J. Harger, was read and illustrated by an exhibition of all the necessary instruments for its performance, and by a large number of fresh specimens showing the different steps of the operation. It proved to be one of the most thoroughly scientific papers read before the Association, and reflected much credit upon the essayist, who had several complete recoveries of hopeless roarers through the operation described. It was thoroughly discussed by many of the members, and a thousand copies were ordered printed. A generous offer was then made by Mr. Teufel, and accepted with thanks, of a series of cuts to illustrate more clearly the operation and to enhance the usefulness of the paper.

A report on the so-called uterine stones reported at the semi-annual meeting was made by Drs. Ridge and Formad. Their examination revealed the fact that they were not concretions formed within the bodies of the animals from which they were taken, but were ordinary stones and had been placed in the uterine cavity for some deceptive purpose.

In the absence of Dr. Waugh his paper on "The Veterinarian—Intellectually, Socially and Morally," was read by Dr. Alex. Glass. It proved a very interesting paper, and plead forcibly for the higher and broader education of the future members of our profession in the colleges.

The Treasurer's report exhibited a balance of some forty-eight dollars, and the payment of a large amount of initiation fees and dues enabled the Association to draw orders for every outstanding bill against it.

The new officers were then seated, retiring President Kooker introducing the new President in a very complimentary manner. Some remarks on accepting the office of President were made, after which the meeting decided to hold their semi-annual gathering at Allentown in September next.

A motion for adjournment then prevailed.

N. N. S.

WESTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The fifth meeting of the Western Iowa Veterinary Medical Association was held in the parlor of Burk's Hotel, Carroll, Ia., on Wednesday evening, March 23, 1892, pursuant to the call of the Secretary, and was called to order by President G. I. Gibson, after which, in a few well chosen remarks, the President thanked the Association for the honor conferred upon him at the last meeting during his absence, also expressing his gratification upon the growth of the Association.

Upon roll-call the following members were present: President G. I. Gibson, Vice-President G. C. Williams, Secretary L. U. Shipley, Professor W. B. Niles, of Ames, S. H. Johnston, G. A. Johnson and Dr. Heck, of Harlan, as a visitor.

The minutes of the previous meeting was read by the Secretary and approved; also letters of regrets for non-attendance from Dr. R. R. Hammond and others.

Under the head of new business it was moved by G. A. Johnson and seconded by S. H. Johnston that the Secretary be instructed to correspond with the Secretary of the Northeastern Iowa Association upon the idea of holding a joint meeting of the two Associations at Ames, Ia., some time during the summer. The motion was carried.

Dr. Gibson then suggested that the Association take some action looking to the bettering the standard of breeding stock in Iowa, and the Doctor further suggested that members of the Association and all veterinarians might promote the cause by writing articles for their local papers and the stock journals.

It was then moved and seconded that the Association recommend a law bearing upon this subject. This motion brought out a spirited discussion and considerable difference of opinion as to the advisability of such a step.

Professor Niles then presented some notes on experiments upon the use of pilocarpine, also on the different disinfectants n general use as applied to wounds, which elicited an interesting discussion.

It was then moved and seconded that the President declare Dr. W. H. Heck a member of the Association, which he did, expressing his pleasure in so doing.

Dr. G. A. Johnson then presented a paper on "Difficult Parturition and the After-Treatment," which was followed by an interesting discussion.

The meeting then adjourned to meet at the call of the Secretary.

L. U. SHIPLEY, *Secretary.*

KANSAS STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Kansas Veterinary Medical Association was held in Manhattan on March 10th and 11th, 1892.

The meeting was called to order by Vice-President Hunter. The following members were present:

Drs. Hunter, Cook, Brady, Orr and Mayo.

The following members were elected: Drs. Nott, Welch, McCassy, Eisenhoner and Wattles.

Upon invitation the Association visited the State Agricultural College, and were much pleased with the work being done there.

In the evening Dr. Hunter read a paper entitled "What Is It?" describing a peculiar case of malignant tumor in the pharynx of a troop horse. The paper was very interesting, and gave rise to considerable discussion.

Dr. Mayo followed with a report of an outbreak of "mad itch," or "hydrophobia," so called, in cattle. The discussion which followed drifted to the interesting subject of "stalk disease" in cattle.

The other essayists being absent, a question box was introduced, which proved very interesting, every one present taking part in the discussion of questions presented.

According to previous notice section 4 of the Code of Ethics was stricken out.

A committee, consisting of Drs. Welch, Orr and Mayo, was appointed to draw up a fee bill for the use of the Association and present it at the next meeting.

The following resolution was adopted:

Resolved, That the Kansas Veterinary Medical Association condemns the method of meat inspection as practiced by the Bureau of Animal Industry at Kansas City, where only one graduate of a veterinary college is employed. Fitness for the position, and not political influence, should be the qualification for appointment. We consider the method now in vogue at Kansas City as detrimental to the veterinary profession and inimical to the proper inspection of meat.

A vote of thanks was extended to the resident veterinarians for their hospitality, and the Association adjourned to meet in Topeka on the Thursday of State Fair week.

N. S. MAYO, *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

Through the kindness of Dr. W. H. Cooper, V.S., Secretary, we have received notice that the eighth annual meeting of this Association was held on the 14th of April at the State Street House, in Trenton, N. J.

CORRESPONDENCE.

MOUNT STERLING, KY., April 14th, 1892.

Prof. A. Liautard, M.D., V.S.:

DEAR SIR: If you think the case I mention here worthy of notice, will you please report it in the REVIEW?

The patient was a three-year-old colt. The history was this: Last fall a slight enlargement was noticed at inferior third of neck, just at the commencement of thorax.

The colt had run at grass ever since, until April 12th, when it got in the stable and ate some corn and fodder.

On April 13th the owner came for me, saying that he thought the colt was choked with a corn cob. When I arrived I found a large swelling at inferior third of neck which felt like a soft tumor. The trachea was displaced very much to the left. Great difficulty in breathing, discharge of food from nostrils, also attempts at vomiting, and food would be sometimes ejected in this matter.

I cast the colt and dissected down on the swelling, which I found to resemble a distended bladder, and found the trouble to be a rupture of the muscular coat of œsophagus. The rupture was about three inches in length, and had evidently taken place some time previously. As I found this condition I destroyed the colt and took out the œsophagus at that part, and found the mucous membrane inflamed. I think the rupture must have taken place last fall, when the swelling was first noticed, but owing to the grass diet which the colt had received, no serious trouble resulted, until he ate corn and fodder. The œsophagus at that portion where the rupture existed, was packed with corn and other food.

Trusting that you are enjoying good health,
I remain, yours very truly, FRANK HARVEY.

SUNDRIES.

KENDALL'S SPAVIN CURE.—The following formula is the result of an analysis made in our laboratory and makes a preparation not to be distinguished from the original. Kendall's Spavin Cure is put up in a twelve-sided amber bottle, which contains 5½ oz. of clear brownish-red liquid. It contains camphor and a heavy petroleum oil, turpentine, alcohol, free iodine and oil of rosemary in the following quantities: Turpentine, 1 fl. oz., alcohol, 2 fl. oz, camphor, 240 grains, iodine, 25 grains, petroleum oil (heavy) ½ fl. dr., oil of rosemary, 1 fl. dr. In the mixed fluids (without filtering) disolve the camphor and the iodine.—*New Era.*

A SPECIFIC FOR TETANUS DISCOVERED.—Dr. R. Schwartz, of Padua, announces the successful treatment of tetanus by means of injections of the tetanus antitoxin of Tizzoni and Caltani. These experimenters succeeded in producing immunity against tetanus even in animals susceptible in a high degree, and have shown that the blood-serum exerts an antitoxic action, and is capable of producing immunity against and cure of the disease. They succeeded in obtaining this tetanus antitoxin in a solid state by the addition of alcohol to the serum, and by drying the precipitate *in vacuo.* As the disease in man is of longer duration and less certainly fatal than in many animals, there seemed to be good reason to hope that the tetanus antitoxin might be of great value. Gagliardi, of Molinella, treated a severe case by hypodermic injection of one gramme. All symptoms of tetanus disappeared and complete recovery ensued. Schwartz relates at length the case of a peasant boy, aged fifteen treated, by him.—*Medic. Rec.*

FOR SALE.

Good practice in city of forty-five thousand (45,000), with country practice. No other graduate within one hundred and ten (110) miles. Mild Winter and cool Summer. ***J. POE, V.S., Knoxville, Tenn.***

AMERICAN VETERINARY REVIEW,

JUNE, 1892.

EDITORIAL.

Tuberculosis of Animals.—We continue in the present number the publication of our translation of the important paper read by Professor S. Arloing before the Congress on tuberculosis held in Paris about a year ago, of which we gave the first portion in our last issue, and shall print the concluding part in our next. While the arguments of the paper, with the confirmatory documents upon which they are based, and the conclusions to which they lead, may not be received with the same degree of conviction on this side of the Atlantic which has accompanied them on the other, nor the same value accorded to the statistical facts which it furnishes, and the figures which have been cited, we have still thought it likely to prove not only of great interest to our readers, but also of great value in the discussions which are sure to take place at a later period, upon the practical question of precautionary measures against the possible epidemic spread of a disease which involves so fearfully the health and life of both man and beast.

The important problems which we believe must soon arise for settlement in consequence of the presence of tuberculosis amongst animals in this country, and the constantly increasing danger to which human life is exposed so long as sanitary precautions are not efficiently employed against its diffusion, together with the pecuniary disaster which may befall our agricultural interests from its fearful ravages, and the risks to which our national farm stock is exposed—all this furnishes sufficient grounds for solicitude, and justifies an urgent call to our sanitary and governmental authorities to give their attention to the matter at the earliest possible day.

A careful consideration of what has already been said on the subject in the various agricultural and scientific papers, and the sanitary measures already mutually agreed upon by some of the States, furnish sufficient evidence that the day is fast approaching when the subject of tuberculosis in this country will assume a position of recognized national importance, equalling, if not exceeding, that which was occupied some years ago by that other scourge of bovines, pleuro-pneumonia, now happily so nearly eradicated by the labors of the National Bureau of Animal Industry.

VETERINARY EDUCATION.—The propriety of lengthening the course of studies at the American Veterinary College has been under consideration for some time by the Faculty of that institution, who at as early a period as July of last year had determined by a unanimous vote to extend the term to three years ; and at a recent meeting of the Faculty this decision was officially and formally ratified by resolution, the change to be inaugurated as soon as the Board of Trustees will have provided the enlarged accommodations which a step so important will render necessary, and an earnest request has been laid before the Directors of the College, urging them to make the necessary arrangements at the earliest date possible ; and thus the matter rests in the hands of the Directors for final disposal. A three years' course will impose on the Faculty an entire change in the curriculum and in the arrangements of the lectures, with other details, and after careful consideration it became very evident that with the accommodations now possessed by the college it would be impossible to do justice to the newly instituted order of things.

The Faculty of the American Veterinary College, in adopting the decision of a three years' course, have undoubtedly done well. It is to be regretted, however, that the college finds itself seriously crippled in the practical work of putting into execution the changes required by the new programme, and the good wishes and sympathy of all its friends will undoubtedly accompany the efforts of the Board of Trustees to accomplish the result desired in finally putting the college in good working order and on the way to a career of prosperity and influence which will amply reward its supporters and alumni.

ANOTHER VETERINARY JOURNAL.—The *New York Veterinary Journal and Record of Comparative Medicine* is a recent addition to our literature. It is to be published quarterly, and will be under the editorial guidance of Dr. J. H. Gardner, Theodore O. Keller, A. S. Courtney and A. G. Carter. Its motto, "*Sine Præjudicio et Suum Ciuqui*," indicates the independent and impartial character which it assumes. Let the *Record* be welcomed, and may success attend its career.

ORIGINAL ARTICLES.

NATIONAL AND INTERNATIONAL MEAT INSPECTION.

A REVIEW OF PROF. SCHWARTZKOPFF'S CRITICISMS* UPON THE REPORT OF THE COMMITTEE ON MEAT INSPECTION† TO THE UNITED STATES VETERINARY MEDICAL ASSOCIATION, SEPTEMBER, 1891.

BY W. L. WILLIAMS.

The presentation of a paper on National and International Meat Inspection to the United States Veterinary Medical Association, at its annual meeting in Chicago in 1890, by Prof. O. Schwartzkopff, created a sufficient amount of interest to lead to the appointment of a special committee, consisting of Drs. Williams, Schwartzkopff and Clement, in order that the subject should again be brought before the Association for further discussion.

Owing to a misunderstanding as to the personnel of the committee, Dr. Clement did not become aware of his connection therewith until too late to take an active part, and there being some differences of opinion upon essential questions between Dr. Schwartzkopff and the chairman, it was found expedient to make a report as chairman of the committee, at the same time requesting Prof. Schwartzkopff to prepare a special report upon the points in controversy.

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* REVIEW, Vol. xvi. p. 4. †Journal, Comp. Med. & V. A., Vol. xii. p. 529.

When the committee came to report Prof. Schwartzkopff was unexpectedly absent and this, with a lack of time for proper discussion, prevented its consideration beyond the presentation of the report, and again the recognized importance of the questions involved led to the appointment of Drs. Schwartzkopff, Faville and Bryden as a special committee for 1892.

For reasons at present unknown, Dr. Schwartzkopff has seen fit, instead of awaiting his opportunity at the next meeting of our Association, to enter upon an exhaustive criticism* of the report† at every point where it at all diverged either in form or spirit from his paper presented in 1890.‡

In attempting a reply it is desired that the brief quotations made by Dr. Schwartzkopff from the report be read in the original text, with their connections, since in one or two instances false conclusions may be readily drawn from such extracts.

In criticising the suggested classification of diseased meats§ and in attempting to uphold that proposed by him,‖ he states that such a classification as that of the report was proposed long ago by "dreamers," but failed. He neglects to state where and when it was tried, or why it failed. Neither does he apparently consider that even if we now possess sufficient scientific data upon which to base such a classification, we did not at the date to which he refers. It certainly cannot well be held that because a premature attempt at scientific classification, probably tried under strong prejudice and unfavorable surroundings, failed, that a scientific classification of diseased meats is still impossible. The impossible of yesterday need not be the impossible of to-day; hence it was urged in the report that something more scientific should be possible now than that which has long been in use.

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*Review, Vol. xvi. p. 4. †Journal, Vol. xii. p. 529. ‡Review, Vol. xiv. p. 471.

§ Journal, Vol. xii. p. 534. ‖ Review, Vol. xiv. p. 472.

In stating that the proposed classification did not rest on facts and was therefore not scientific, Dr. Schwartzkopff denies the truth of fonr distinct propositions, which we had been led to believe were universally admitted by scientific veterinarians. They are:

1st: Meat infested by certain living animal parasites when eaten by man is dangerous to health or life through the development or migrations, or both, of the parasitic organism.

2nd: There exist diseases of animals, not transmissible to man, which can only injure the consumer of the carcass through the presence of chemical products, either the result of special micro-organisms or of tissue metamorphosis.

3rd: There are many diseases transmissible directly from animal to man and the flesh of which contains a second element of danger to the consumer in the presence of ptomaines or other toxic products.

4th: There exist bacteriological diseases of animals identical with certain diseases of man, which in individual cases may affect the animal in so mild a form as to be dangerous to man only from the presence in the flesh consumed of living micro-organisms capable of transplantation.

If these propositions are facts, a classification of diseased meats upon these is scientific, but if Dr. Schwartzkopff can show that these are errors, then the proposed classification can never ensue.

Supplementary to his charge that the proposed classification is unscientific, he misconceives the force of the word "may" as used in a piecemeal quotation from the report, and gives it a meaning not at all intended, and which we believe cannot be substantiated by a strict English construction of the sentences.

In attempting to justify his classification in the paper presented in 1890,* he presents as his only arguments the statement that it is the method generally employed in Germany, "and has grown up from established facts and in conormity with practical principles." He fails to note that the environments in Germany are quite different from those of meat inspection in America, so that "established facts," etc., may be very widely different, and what may prove advisable or necessary in Germany does not mark out an essential line for action in America.

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*Review, Vol. xiv. p. 472.

Preliminary to the exceptions Dr. Schwartzkopff offers to the position taken in the report relating to the transmissibility of actinomycosis, he objects to the definition of contagious* as "unnatural and strained,"† and denies that the word "contagion" has changed in its meaning, or that our conception of its meaning has changed during two centuries, but that it now means as it did then, that "a healthy animal must come in contact with a diseased animal to contract a particular disease."

To say that our conception of contagion has been stationary for two centuries is equivalent almost to saying that medical science has been sleeping during that time, for if we have made any advances at all, if we have discarded old conceptions and applied newer and more experienced meanings to words, surely our conception of contagious (or infectious) has undergone a wonderful evolution. But contagion does not bear to us the same conception as two centuries ago, and did not mean then that in order for an animal to become affected with a contagious disease, it must come in contact, or even near to, one affected with the same malady, and even writers of the present generation have not so held. Fleming maintained in his Veterinary Sanitary Science and Police, that glanders could originate spontaneously, *i.e.* other benign diseases like strangles, etc., could, under certain surroundings, develop into glanders; but Dr. Fleming admits that medical science grows, and cheerfully owns that he erred and that his conception of contagion is far different now from what it was two or three decades ago, and his admission represents not the views of a misguided individual, but an enormous change in the knowledge of the medical world and a total reconstruction of our conception of contagion.

Even now no authority holds that contact of animal with animal, as stated by Dr. Schwartkopff, is at all necessary for trans-

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*Journal, Vol. xii. p. 538. †Review, Vol. xvi. p. 5.

ission of contagious diseases, as the diseased animal may be
ft far behind and the disease be transported across continent
nd ocean, and planted anew in the bodies of susceptible ani-
als. Nor do we now mean that the disease-producing
aterial must be derived from a diseased animal, but can
rocure it from the bacteriological laboratory, where it has
een cultivated generation after generation on vegetable or
ther media, or from the soil in certain localities where, so
r as is now known, the pathogenic germs have existed ages
efore the animals now regarded as naturally susceptible had
ppeared in the infected area. In what respect the commit-
e's definition of contagion was unnatural or strained he does
ot say, and leaves his bare assertion as his only argument.

Passing to what Dr. Schwartzkopff apparently con-
iders gross ignorance on the part of the English-speak-
g veterinary profession in their general lack of discrim-
ation in the use of the terms contagious and infectious,
e suggests that “there are surely yet as before contagious
nd infectious diseases, and the best pathologists still apply
oth terms in a well-defined way.” It must be frankly admit-
ed that no English veterinary writer has yet appeared who
s able to draw a distinction between the two in a sufficiently
lear manner to meet the approbation of a majority of our
rofession. Turning to German veterinary literature we find
rof. Dieckerhoff and Professors Friedberger and Frohner, in
heir standard works on special pathology, disregarding en-
irely the division into classes of transmissible diseases, the
wo latter explicitly stating that the classification was useless,
nd placing the whole list of transmissible maladies described
n index and text under one category, “infectious krankheiten,”
vhile the French writers apparently favor the word conta-
ious, and use it largely to indicate the same group of dis-
ases. We are well aware that certain writers have ineffec-
ually (except for themselves) attempted to make a distinction
etween the two words by applying “contagious” to those
ffections where direct contact is necessary and “infectious”
o those in which no such contact is essential, while others
everse this order.

Various other pathologists hold yet other views as to the meaning of these words, and among these there is, according to Dr. Schwartzkopff a group (to which he apparently belongs) who apply the term infectious to those diseases in which "the micro-organism has its natural origin outside the animal body on vegetable life." By such a classification apparently, Dr. Schwartzkopff holds that actinomycosis, for instance, is not contagious but merely infectious, and that the actinomyces originate outside the animal body on vegetable life. The proof of such a genealogy for actinomyces apparently rests upon the fact that the germ was studied for years as affecting the animal body before it was found on vegetation, and it still exists in a more luxuriant form in the animal than on plants.

Being by the admission of Dr. Schwartzkopff transmissible from animal to animal, the disease was *contagious* when known in animals only, and became *infectious* when found some years later growing very scantily on vegetation. But a large proportion of known pathogenic organisms are artificially cultivated in vegetable media, and we at present have no means of knowing but that they were originally derived from vegetation, consequently such a classification would prove vacillating, and the line separating the two would waver to and fro as the weight of evidence at a given epoch favored an original animal or vegetable habitat, and could never be definitely settled until new means are discovered for determining whether in a given disease the pathogenic germ was derived by animals from vegetation ; or, on the other hand if the pathogenic germ found on vegetation was derived from animals. Priority of source of discovery by man, or complexity of development, cannot suffice to positively indicate the primitive habitat.

Consequently we see utter confusion in the various attempts to put a definite meaning on these terms satisfactory to all. If, however, one will at the outset define the terms which he proposes to use, his definition must necessarily suffice for his contribution, and critics are in duty bound to accept such definition in subsequent portions of the given ar-

le. With this end in view the committee defined the word
ontagious" at the outset of the report, and any discussion
subsequent portions must necessarily be based upon that
finition.

If Dr. Schwartzkopff has effectually overthrown the
finition of *contagion* his criticisms of subsequent por-
ons of the report are wholly irrelevant, as the report
ds in so far as the word contagious is involved when
at definition is destroyed, while if the definition re-
ains the criticism must be based thereon. There is
anifestly nothing to be gained by Dr. Schwartzkopff
cusing the committee of misstating the views of numerous
thors on the subject of actinomycosis* when the sole
ound for such accusation rests upon the different concep-
ons held by the disputing parties as to the meaning of a
ord, the force and meaning of which in the report had al-
ady been clearly stated. The real foundation almost
roughout Dr. Schwartzkopff's criticisms rests upon this
ibble over the meaning of a word.

Dr. Schwartzkopff criticises the committee sharply for
ncluding that inoculation constituted a crucial test of
ntagiousness, and asserts that pleuro-pneumonia of cattle
has never been transmitted to any experimental animal."
he point seems, however, to be in controversy, and Arloing†
d Law‡ seem to hold opposite views to those set forth
ove.

Moreover, Dr. Schwartzkopff will doubtless admit that in-
ulation produces a degree of immunity against this disease,
d in the present state of our knowledge this immunity can
referred to but two sources—the growth within the body of
e inoculated animal of the pathogenic germ, or to the in-
oduction into the healthy animal of toxic products resulting
om bacterial growth or presence. Admit the former and
e immunized animal had pleuro-pneumonia; admit the latter
d it was not inoculated with the disease-producing germ.

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*REVIEW, Vol. xvi., p. 11.

† Veterinary Journal (Fleming's), Vol. xxix., p. 260.

‡ Farmer's Veterinary Adviser, Appendix, p. 78.

On the other hand, to show that all inoculable diseases ar not contagious he cites the pus-forming germs, but a casu glance at the definitions given by both Dr. Schwartzkopff and the committee[†] will at once show that this fulfills all th conditions of either, and furthermore all modern surgery based upon the transmissibility from patient to patient of th pathogenic organism.

While not definitely stated the inference may be fairl drawn from the criticisms of Dr. Schwartzkopff that h would have the reader believe that the committee held in th report that actinomycosis was highly contagious (or infe tious); that it was generally due in animals to transmissio from animal to animal; that it could be readily transmitte from animal to animal or man; and that the destruction c the meat from animals mildly affected was an advisable san tary measure. A careful reading of the text of the repor will clearly show that these inferences have no foundation.

TUBERCULOSIS OF ANIMALS IN ITS RELATION TO HUMA ALIMENTARY HYGIENE.

By Prof. S. Arloing.

(*Continued from page* 69).

C. After argumentatively reducing the noxious prope ties of raw meat to their minimum point, the attempt is mad to reassure us completely by alleging that the process c cooking entirely destroys the comparatively rare bacilli whic may exist outside of the tuberculous lesions. We do not fo an instant doubt that well-cooked meat is perfectly sterilized but we also know that in many of the numerous forms of cul nary preparation sterilization is far from being certain. Whe the juice escapes uncoagulated from the cut surface of roasted joint of meat, the cooking has certainly been insuff cient to destroy all the tuberculous bacilli in every portio of it, although in such a case the noxiousness may be consic erably diminished.

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[*] Review, Vol. xvi., p. 6. [†] Journal Vol., vi., p. 538.

Johne has studied the effect upon meat infiltrated th tuberculous substance, of immersion in boiling water - a period of ten or fifteen minutes, and as the result of ty-two experiments concludes that it diminished the wer of infection through the digestive canal by one- lf. That is, while thorough and perfect cooking may re- ve the danger of tuberculization, it is reduced by only y per cent. when the point of the coagulation of the albu- n of the juice has not been reached in every part of the eat.

We will now, if you please, make some calculations which ll enable us to form a more precise idea of the danger re- lting from the use of tuberculous meat, bearing in mind at e same time all the circumstances and conditions by which is likely to be modified or diminished, and carefully avoid- g any exaggeration of results in favor of our own convic- ns, but making rather every possible concession and allow- ce to the claims of those who holds views adverse to our n, and when necessary averaging fairly any extremes or ersities of fact which may be discovered in the calculations.

We remember that out of 137 guinea pigs inoculated with c. of the juice of suspected meat, 13 became tuberculous. e have shown that 100 grammes of pressed meat give 30 ammes of juice. Therefore 450 or in round numbers 500 ammes of meat were employed to inoculate 137 guinea gs, and consequently a tuberculous steer, furnishing 380 os of meat, could infect 600 times 13 guinea pigs—say 7,800. however, the infection by ingestion gives only 11.8 per nt. of positive results, the 7,800 will then be reduced to 920. d again, as cooking reduced the chances of infection by e-half, the number of guinea pigs tuberculized by the meat a tuberculous steer will be 460.

Let us consider further: At Lyons where 50,000 cattle e annually slaughtered, 5 per 1,000, or 250, are tuberculous. en, as according to our statistics, the experiments on the in- ctiousness of muscular juice are positive in one-fifth of the ses experimented upon, we will then admit that out of e 250 steers 50 only are dangerous. Consequently the annual average of the meat of the tuberculous steers killed a Lyons may infect 2,300 guinea pigs.

Mr. Lydtin tells us that in 1888 in the slaughter houses c the duchy of Baden, 2,332 tuberculous animals were founc out of which only 458 were excluded from the general cor sumption. Our estimates show here that out of the remair ing 1,774 one-fifth or 355 were also diseased, and could hav infected 163,000 guinea pigs. And again, from the same ver moderate estimates in respect to the tuberculous meat turne out by the abattoirs of Paris, without counting those whic may have been introduced without examination, 156,70 guinea pigs could be tuberculized through the digestiv tract by the use of their meat imperfectly cooked.

How many members of the human family may have bee tuberculized with such a mass of infectious material is painful inquiry, and one which no man can answer. But a the more it is our duty, with the proofs in our hands, to urg the adoption of preventive measures, and to suffer no re laxation of effort in our work of protecting, not merel animal, but human life.

D. To those who discuss the point whether more injury i not inflicted upon humanity, and especially upon poor people by depriving them of tuberculous meats than would accrue fror allowing their consumption, we will answer that they allov themselves to be guided by a wrong appreciation of the dan ages which would result from the destruction of the tube culous meats.

First, these meats are generally of medium or low qualit and the amount which would be lost to consumers by thei banishment from the markets is truly very insignifican Placing at five per 1000 the number of tuberculous animal a total and vigorous seizure would merely deprive each ind vidual Frenchman of the five-one thousandths part of hi annual consumption. And the average weight of the mea consumed by each individual in a city being sixty-four kilog six hundred gramms, and by one in the country, twent one kil., eight hundred and ninety gramms, the total and ri orous seizure would deprive the first of only three hundre ıd twenty-three gramms, and the second of one hundred and ne, in an entire year. Consequently, it seems to us that ır propositions are not of such a nature as to interfere notay with the source from which we draw a part of our ıergy.

Perhaps it will be suggested that it would be better to ıpose this loss on society at large, than to jeopardize its tality by the creation of new centers of tuberculosis.

But, as we shall presently show, we do not desire to im›se the loss on any, but on the contrary, we aim to economize these five-one thousandths of the annual production, rough a loyal understanding.

E. What we have said forms a partial answer to e last objection brought against our last argument: it truly necessary to impose a loss upon agriculture d to interfere with the usual course of commercial transtions in order to guard against so slight a danger?

Those who offer this objection are sure to depreciate the mensions of the existing evil, and equally sure to exaggerate e consequences of severe and energetic measures, somenes even insinuating that it is to the stringency of contagıist ideas, and the severity which it encourages, that a gradl enhancement of the prices of meats is to be attributed. ›t us bring these assertions to the test of examination.

Knowing no better method of ascertaining the facts cessary for data in this case, we have endeavored to learn e number of tuberculous animals received in the abattoirs the various county towns of each of our departments, and ve with this view communicated by circular with the veterinans having charge of the inspection, asking, first, the number calves, steers, cows or bulls and swine killed during the years 85 to 1890, inclusive; second, the number of tuberculous imals found in each category during the same period; rd, the number of these last which were used for food.

I am thus indebted to the kindness of the majority of these ethren for the facts concerning 1,734,502 calves, 1,013,808 ers, cows and bulls, and 1,116,351 swine.

The calves have furnished 43 tuberculous, or 0.024 per cent.; the steers, cows or bulls, 4,326, or 3.88 per cent., and the swine 126, or 0.112 per cent.

Out of 43 tuberculous calves, 33 were kept back; of 4,326 adult bovines, 2,600, and of 126 swine, 40.

Consequently from fifty-two French cities and towns in five years, the inspectors of meat have confiscated as tuberculous, fifteen-ten thousandths of steer or cow meat; nineteen one millionths of calf, and three-one hundred thousandths o swine meat.

In his excellent work on "Zootechniè générale," Mr. Cornevin states that in 1882 the money value of meat consumed in France was for beef, 820,415,847 francs; for veal, 264,312,597 francs; and for pork 584,610,118 francs.

Estimating and assuming the ratio of exclusion to have been equal throughout the country to that which has been stated for the country towns, the loss incurred would be for beef, 1,230,615 francs; for veal, 5,030 francs; and for pork 17,538 francs, in five years. In other words, the prices o meats, for the reason in question, would have sustained a rise of some millins only, while from 1862 to 1882 it has undergone a rise of 42 per cent. on beef, and 20.60 per cent. on pork.

As we make no pretensions to the title of an expert economist, we will not undertake to indicate the true causes o such a rise in the prices of meats. But we are sure that to establish among them the measures taken against the use of tuberculous meats would be equally childish and futile.

To this day no one can seriously lay an accusation agains us of having compromized in any manner, or from any poin of view, the interests of poor people or of the agricultura class. If certain producers and dealers have made a grea noise and become excited on account of the repressive measures, the motive is easy to understand, and their object eas to penetrate.

We are willing to acknowledge that though the interest of agriculture have not been jeopardized, those of some individual agricultursts have at times suffered, and this fact has no failed to excite our serious concern.

(*To be continued.*)

ETHICS AS A MEANS OF ELEVATING THE VETERINARY PROFESSION.

By A. Liautard, M D., V.M.

(A paper read before the Massachusetts Veterinary Medical Association.)

Mr. President and Gentlemen of the Massachusetts Veterinary Medical Association.

It is in accordance with the common proverb so fully accepted in this country, "*Be sure you're right, then go ahead;*" and after carefully weighing the matter, that I have concluded to prepare the remarks to which you are about to listen. And now that I am before you, without any doubt as to your readiness to give me your attention, the question "Am I right?" again presents itself for my decision, and it is not altogether with a feeling of comfortable certainty that I answer "Yes," and "go ahead" accordingly.

From whence does this doubt arise? Not because I fear that the subject of this paper does not deserve our attention, nor because of its possible failure to receive from you a favorable consideration. No,—but because while seeing so many friends around me, and remembering their warm and cordial hand-shakes, and other proofs of their kind feelings, I almost fear to go on lest I should forfeit the friendship and lose the esteem they have so liberally manifested towards me, by giving utterance in my remarks to something which may wound the sensitiveness and disturb the feelings of pride and of personal opinion which I would studiously shrink from offending —because, in saying what I am about to say, I have some apprehension lest the cruel truth may not be complacently received by all, and my motives may not be fully appreciated, nor my remarks in all cases accurately construed or received in their intended sense and true application.

Shall I proceed? Yes,—but before doing so, let me assure you that nothing that I may say shall be influenced by the slightest desire to become a personal critic of any one's actions or conduct. Let me assure you, in beginning, that, far from being desirous to find fault or to attach blame in any direction, my sole wish is for the elevation and honor of our profession, and it is with the hope that this intention on my part and my assurance that the sincerity of my purpose will be generously accepted, that I announce my subject as *Ethics as a Means of Elevating the Veterinary Profession.*

According to Webster "Ethics" form the science of human duty, or in a wider sense, the study of what is proper and improper in the ordinary relations of human intercourse; or, of that which is or is not mutually convenient and beneficial in the exchanges of conduct which take place in daily life between individuals or towards the community. The collation of the rules which regulate our mutual conduct forms the code of ethics which we find printed in the publication of the constitutions and by-laws of many professional organizations. That these codes of ethics have failed in many instances to realize the objects for which they are established. is a fact too well known, and sometimes the necessity for their existence is on that account strongly--though we think wrongly--doubted; though it may be conceded that if all men would take pains to well understand the spirit of their professional obligations, or their ethics, and shape their conduct accordingly, there would be little reason for the establishment of formulated codes. Imperfect as the result of their operation may be, however, it cannot be denied that they were made for the purpose of educating those who may be ignorant of this science of human duty, and therefore to elevate them and their professional standing, as well as the profession itself to which they belong. And therefore the propriety and necessity for their existence.

The evidence is ample and undeniable that since the organization of veterinary societies, with their constitutions and by-laws, and their ethical codes, the veterinary profession has gained much in social as well as professional standing before the community. But is the good which has been thus far realized all that can be attained? Have the ethics of all veterinarians been of such a quality that no more can be expected from them in the way of mutual duty? and have we to-day realized the *ne plus ultra* of elevation and refinement of deportment which a practical knowledge of ethics can give us? Is there not something that can and ought to be done to improve upon our ethical laws, and by that means largely elevate the status of our profession? I think there is yet much to be done; I think that we sin in many cases unwittingly, and in numerous instances from ignorance, and this is the point I have in view in these few remarks.

First of all, where does the first fault belong—who is the original sinner against the ethical code?

I think I can answer: veterinary institutions, schools and colleges. Let us see whether I am mistaken or not. A young man has reached that period of his existence where it becomes necessary to lay a foundation for the struggle for existence which lies before him, and he has decided that he will follow a professional career, and in preference to others he has selected the field of veterinary practice—perhaps because, as an agriculturist he is accustomed to live stock and fond of animals, or perhaps because he likes the study of medicine. It matters little as to the impelling motive. He has decided to begin in the proper way, and has made up his mind to enter college. Where will he obtain reliable information at this point? He talks to his friends, to his relations, and to others, and in many instances they deride his choice and ridicule the idea of his becoming a "horse doctor." Their ignorance causes them to point out to him the alleged folly of his choice, and to institute comparisons of rather an unfavorable aspect, and to disparage the respectability of a veterinary course of life. But he has probably been fortunate enough to know or hear of some good and respectable men who have succeeded in doing well in that profession, and if he does as well as they he will be satisfied. He hears that there are places called veterinary colleges, and he asks "where are they?" How can he learn something about them? He looks in a medical paper for an advertisement of such an institution, but of course he finds none; as a rule, veterinary colleges do not advertise in medical periodicals. Then he searches the agricultural papers, and here he peradventure may, or more probably will not, find a short notice of one or two such institutions. But at length he has heard that there are five or six, or more, of such places, and he must know more about them.

One day by chance his eyes fall on the pages of a sporting paper. He was reading some interesting article of sporting nature, the report of a trotting race, the victory of some well-known thoroughbred in a running match, the report of a baseball match, or of a prize fight. Every young man in this country has more or less sporting blood in him, and by a mere chance his eyes fall on a rear page of this sporting paper, to alight, at last, on what he wanted, and his troubles now truly begin. The advertisement of one offers him "a three years' course with unequalled facilities for practica instruction." Another offers him "the advantage of a ful university course, with the opportunities of acquiring a thorough scientific training." A third, more modest, merel promising him, "the most complete course of veterinary instruction in America." A fourth tells him that "it is th most successful on this continent." A fifth says, "that it i not only the most successful veterinary institution in America, bnt "that it has experienced teachers." A sixth informs him "that it is the only institution empowered to grant diplomas, and so on, until the poor fellow is more than ever embarrasse as to where he had better go for the training he seeks.

Let me ask you, Is this ethics? Is it worthy of our profession? Is it becoming in those worthy gentlemen who ar supposed to be working for science to lower themselves t the standing of the advertising merchant who booms his bus ness by announcing "the largest stock, the best goods, an the lowest prices" in the country, and whose name is legion

At any rate the young candidate for veterinary honors a last makes his selection. He enters college; stays there th required time, and gets out with his degree. What degree It should be supposed that veterinary titles should be, a least in one country, the same all over, and that as the term veterinary surgeons, thierarzt, medecin veterinaire, etc., etc have the same meaning all over England, Germany or Franc and other countries, they should have the same significatio throughout America. But no! The booming of the adve tisement is here again visible, and the new graduate become a *V.S.*, a *D.V.S.*, a *D.V.M.*, a *V.D.M.*, a *B.V.S.*, or what not?

But incidental matters are of no great importance to him; he has obtained the title he was after, and now he is going to inaugurate his business and open his "career;" but of course the first step to be taken is to go to the printer or his card. Perplexing moment! how shall he word it? He has seen the cards of others, and does not like their style. His pride rebels against the idea of assuming more than he has a right to; he does not like the idea of announcing himelf as a M.R.C.V.S., a graduate of an English school, a member of so many veterinary associations, etc., and yet he feels hat he must pose as something more than a simple veterinrian, and as long as his *alma mater* has done something for him in graduating him, he will return the compliment. His *alma mater* serves for a trade-mark; he will take advantage of the same, and his card will flourish with "Graduate of *he Blank* Veterinary College."

I know some—who ought to know better—who do the ame thing if they happen to possess a foreign degree, whether it be English, German or French. This is not all, however. Having always "an eye to business," he looks for eferences, and these duly find a place on his card—just as a patent-medicine man, a baby feed maker, an anatomical shoemaker, or perfect corset manufacturer—or what not—it is his rade-mark, and by this sign he hopes to conquer fame and iches.

He goes still further, and though just out of school, and while his shoes are yet covered with the dust of the lectureooms, he sets out to drum trade by becoming a specialist! One is a dentist, another chooses lameness for his specialty, third is great on castration and its various requirements, or perhaps becomes a canine pathologist.

Imagine, gentlemen, a veterinarian of a few hours, and posing as a specialist; or, the possessor of all the knowledge nd expert skill which honest professional men are glad to ttain at the end of long years of study and practice, as if the mysteries of the book of animal diseases could be seized with he first grasp. Let us pause for a moment, and ask where re the ethics, and of what kind are they, that appear in such a procedure? Where does the blame belong for this? I do not wish, gentlemen, to tire you with many other points connected with this subject, and yet there are others which I cannot very well pass over, and which I think tend greatly to lower the profession in public estimation, to an equal degree. The first one is the gratuitous advice that is often given through the sporting press. Not the agricultural nor the medical periodicals, no, but by the correspondents of the sporting papers. These writers seem to have the grace to be conscious of wrong-doing, for you seldom see their full name appended to their screeds; they are rightly ashamed of their work, though not ashamed to receive the emoluments of their labors, for they gain customers by it. Right or wrong, and knowing how worthless the opinion he has put in black and white is, in the majority of cases he does not dare to identify himself with his article, or to be recognized as the author. He may, perhaps, put his initial to his communication, but of what use is this? He is already known too well, and he may try to hide his unprofessional conduct under a coat by means of the anonymous device. And yet, whether only a simple practitioner or one whose name is well known, or even a member of some veterinary faculty, such an action will always operate as a drag and an impediment to the progress of true veterinary science, and a weight upon efforts for its elevation.

Shall I say anything to you of the veterinarian who, for reasons which I leave you to judge, goes clandestinely, under the cover of the night, to perform an operation which, for fear of the law, he dared not make in the daytime? Not courageous enough to recognize or refute the justification of the operation, but never willing to refuse to "sell his goods," bad or good as they may be, he goes under the shadow of darkness, without regard to the responsibility which he owes to his patients, or the confidence placed in him by his employer, for his own self, and above all for the profession which he abuses.

Shall I say anything of him who protects by his knowledge and skill an ignorant quack who has tried to rob one f us of our due by attempting to perform an operation of vhich he knows strictly nothing?

But here let us cease from fault-finding—these are overnany, but many more could be mentioned. They are one and ll disgraceful breaches of ethics, and can have but one effect n the public estimation of our profession. Let us reform he wrongs and we shall gain by it. But how shall we reorm? Who can control the doings of our schools or those f private individuals? This, gentlemen, I believe, rests in he hands of the profession at large.

Several months ago I called the attention of our colleagues o the necessity for reform in our veterinary education, in ur veterinary colleges, but above all in our veterinary gradation. Let the *Veterinary College of America*, of which I poke in Chicago, with its headquarters in the grand city of Vashington, with its veterinary examiners selected from our ntire membership throughout the country, be legally organzed, and we can administer a death-blow to all these breaches f ethics, without which, to-day, our profession cannot elevate tself from the depressed condition it is forced to occupy. o-day we have but few veterinary schools on this continent, nd amongst them all I would not dare to ask you to name hose that deserve that title. But we must be careful and vatchful—a great possible danger threatens us. Where years go a veterinary college as a pecuniary venture, was considred a foolish undertaking, now it is looked upon by those vho lack knowledge of the subject as a good paying enterrise. And who can be assured that they will not soon be tarted as speculative investments? In fact, one is already tarted and in working order, of this character. What the esult is likely to be, I leave to you to judge.

The efforts which have been made to elevate our profesion by some among us for the last twenty years, are in daner of being crushed under the efforts of speculative investors nd adventurers. The honor of the profession will be held s nothing. To make money will be the great aim all about s. It will be no longer the graduation of men, educated in he noblest of the professions, but a regular trade in parchments and diplomas which will give to the holder the right to conceal his ignorance and deceive his employer; to prostitute the practice of veterinary medicine, endanger our national wealth and reputation under cover of a title for which he will have paid so much a head, and in exchange will have received nothing. It is to the veterinary profession of America I appeal on this occasion and ask for their earnest attention to the dangers that threaten them, and beg to urge them to take the proper steps to guard themselves against such a fearful calamity, which for the cause of true veterinary science would almost mean death.

THE USE OF THE FLESH OF TUBERCULOUS CATTLE.

By E. Perroncito *

Translated by W. L. Williams.

The question of the use of the flesh of tuberculous cattle has acquired great interest during the past thirty years, as scientists and prominent hygienists have, from time to time, asserted or denied that a measure of danger of transmission of this dreaded malady from animal to man was brought about by the consumption of such flesh.

This question was discussed by me as early as 1874-'75, with, however, wholly negative results.†

In realization of the weighty arguments, as well as owing to the contradictory results of others, I have felt it my duty, owing to the rich material at hand in recent years, to again recur to this very important question.

Favored by my position as a teacher I was enabled during the years 1889-'91 to conduct a series of experiments with rabbits, guinea-pigs, swine and cattle which were so far completed the past July and August as to enable me to report a summary of them to the Paris Congress for the Study of Tuberculosis and the London Congress for Hygiene.

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* Translated from Centralblatt für Rakteriologie u Parasitenkunde. XI Band. S. 429.

† E. Perroncito, La Tubercolosi in Bapporto alla economia sociale e morale. Turin. Vol. XVIII. 1875.

The meat was procured from the official slaughter-houses n Turin, from cattle affected in various degrees, the meat of which was seized fearing the transmission of the disease by ts use to man.

Three series of experiments were conducted by allowing the animals to devour the affected meat. With rabbits, guinea-pigs and cattle inoculations were made with tissue-fluids; the latter was expressed from comminuted or comminuted and watered flesh. More than 200 rabbits and full as many guinea-pigs were inoculated with this muscle-juice, either subcutaneously or injected into the peritoneal cavity. After a duration of one and a half, two, three or more months, autopsy revealed no trace of the malady.

Two cattle were inoculated subcutaneously with the same material, without developing any evidence of tuberculosis, and when destroyed six months latter no trace of the disease could be found.

Four pigs of one breed (Italian), aged six months, were fed during a period of four months on the flesh of tuberculous beeves and cows, without producing evidence of tuberculosis upon post-mortem examination.

A litter of twelve pigs, aged two months, were fed on the flesh of tuberculous animals for five months. Some of them perished from other maladies, the remainder were destroyed after various durations of time without presenting evidence of disease.

Two small pigs, of the Yorkshire breed, were abundantly fed with tuberculous meat for three months without showing any evidence of infection. They were later fed on intestines bearing tubercular nodules, and flesh from cattle in various degrees of tuberculosis—during the initial stage (gray flesh tubercles), the fluid stage, the caseous stage and after calcification. The two pigs were kept in an ordinary stall under reasonable hygienic conditions. Destroyed to-day both were found perfectly sound; in all their viscera there was not discovered even an intimation of the beginning of tuberculosis.

A question of highest import is presented; evidently it is difficult to transmit tuberculosis to our breed of swine and those imported from England.

How are we to explain the fact that swine kept under the worst conditions and fed on an infected diet yet remain immune, whereas flesh bearing neither tubercles or other evidence of tuberculosis furnishes a notable percentage of casualties of this fearful disease.

REPORTS OF CASES.

REMOVAL OF MEDULLARY CANCER.

By J. S. Culbert, V.S., Portland, Ind

The patient was a gray stallion weighing sixteen hundred pounds, seven years old ; was brought to my hospital March 3rd, 1892, with the following history :

In the spring of 1891, while he was in the stud, the owner's attention was called to an enlargement, situated in the submaxillary space, extending as far back as the trachea, the owner paying but little attention to it, as the horse was in good health otherwise. The tumor had grown to quite a size when he called in a veterinary surgeon, who treated the horse without success. Then he was brought to my hospital for treatment.

In preparing my patient for the operation, I gave him a mild purgative, gave him but little to eat on the evening of the 3rd, and nothing on the morning of the 4th. I gave him chloral hydrate ℥ i., gent. rad. and simple syrup, q. s. to make bolus. I then injected a five per cent. solution of cocaine muriate hypodermically all around the base of the tumor. I then cast him and secured him safely, clipped the hair all over the tumor, sponged it well with the bi-chloride solution one to one thousand. I then made a bold incision about ten inches long on each side, about four inches apart from the most pendulant point of the tumor. I then dissected the tumor out, taking up the veins and arteries, which were very numerous, the tumor being very vascular. After the removal of the tumor (which weighed two pounds) I sponged out the cavity well with the bi-chloride solution. I then sutured up the wound with extra heavy silk twist, not bring-ng the lips of the wound too closely together, leaving room or the swelling. I then loosened his hobbles, let him up and ed him into a box stall, roomy and well ventilated. His ieting consisted of bran mashes, steamed oats and hay, vhich he refused to partake of, only drinking a little water t times, pawing at times and moving around in his box very neasily; throat and jaws very much swollen; discharge from he cut was of a frothy substance; respiration accelerated; ulse full but fast, 65°; temperature ran up 103° F.

The second day's treatment was morph. sulph. grs. iv. hy-odermically every three hours, using hot fomentations to ead and throat every two or three hours, using the bi-chloride olution as an injection. After the third dose of morph. ulph. I discontinued it, as my patient became easy.

The morning of the third day horse much better; temperaure 101°, respiration normal, pulse normal; began to eat. On the orning of the fourth day temperature 100°, eating well, swellng going down nicely; used anodyne liniment, kept wound lean and injected the bi-chloride solution every other day, one o one thousand.

Horse improved and did well, wound healing up nicely. discharged the horse from my hospital March 28th, able to o into the stud service.

DENTAL CYST.

By Wm. R. Claussen, V.S., Waupaca, Wis.

On page 261 of Volume XIV. of the VETERINARY REVIEW recorded a case of dental cyst which came under my notice. ow I have a similar case, which came under my care about month ago.

The subject was a large gray gelding, eight years of age. e had been bought by some horsedealer and brought here, hen he was bought by a farmer, who, at the time of purase, noticed a swelling as large as a teacup at the root of e right ear. He was told it was pollevil and, thinking it uld be easily cured, he bought the animal.

When he was brought to me the tumor was soft and fluctuating, devoid of hair and painless. No heat was noticeable, but the hair around the forehead had an untidy appearance owing to a gluey fluid discharged from a small opening on the edge of the concha. The opening communicated with the interior of the tumor. By manipulation I detected a hard substance at the bottom of the enlargement, which I opened by a free incision. I now saw the crown of a perfectly developed molar tooth, which it took considerable effort to dislodge. When the tooth did come out it had attached to it, just above the root, a tough membrane, which I dissected out carefully, following it to the opening in the edge of the ear. The wound, after being well cleaned, was dressed antiseptically and has healed nicely.

Not so with the colt operated on two years ago. The wound is healed all but a small opening, large enough to admit a fine knitting-needle, which is discharging occasionally a drop of a honey-like substance, so slight in quantity that it is hardly noticeable from day to day, and the owner does not care to have it interfered with.

In the *Veterinarian* for 1874 is printed a paper by Prof. Fleming on Dental Cysts, and he says that it happens that the bottom of a cyst does not cicatrize after the extraction of a tooth and that this is a sure indication that another tooth is forming.

Macraps was compelled to operate twice within three months and in 1860, when he made his report, it is probable a third tooth was forming, as the fistula had not closed then. Perhaps this yearling colt will prove to be developing another tooth, although I can feel no enlargement yet.

In my veterinary literature I find every case of this kind recorded as referring to the horse except in one case, where an incisor tooth was found in a fistulous tract near the right ear of a ten weeks old lamb. Bur I see no reason why other animals might not develop dental cysts. A number of cases in the human race have been recorded.

POTT'S DISEASE IN THE HORSE.

By Prof. J. E. Ryder, D.V.S.

The above condition being of very rare occurrence, and this case one in which the profession of both New York and Brooklyn have been interested, I submit to you a history of the case, together with the lesions found on post-mortem examination.

On January 23rd there came to the American Veterinary Hospital a brown gelding, four years of age, sixteen hands high and weighing about fourteen hundred pounds, the animal being sent by a veterinarian of Brooklyn, with a request that a diagnosis be made.

On examination the following symptoms were noted, viz.: Commencing at the third dorsal vertebra, and extending to the sarcum, the vertebral column was curved toward the off side at an angle of about 45°; accompanying this curved condition there existed upon the off side a large and regular enlargement, extending from the posterior border of the scapula to the external angle of ilium, and from the vertebra to the sterum. This enlargement did not give rise to any symptoms of pain or derangement of the general condition of the patient; at the same time the animal was continually affected with thumps, or a condition which resembled that disorder.

On motion there was a slight dragging of the off hind extremity. With the exception of the above symptoms and the pulse, which was slower than normal and irregular, the animal appeared to be in good health, respiration and temperature normal, appetite good. No diagnosis was made at this time, the animal being placed under observation, and the history of the case obtained through the kindness of Dr. Berns, which was as follows, viz.:

In June, 1891, the animal was examined for soundness by a veterinarian of Brooklyn, who declined to pass him on account of malformation of the hocks; aside from this condition the animal appeared to be sound, and showed no signs or symptoms of his present condition. The animal was returned to the dealer as unsound from the cause named, and soon became ill with some climatic disorder, which was of long duration, recovery not taking place until October.

A short time after recovering and resuming his work the enlargement upon the off side was noticed, and a veterinarian called, who administered a large purge with good results, and the animal again resumed his work. The improvement was only of a temporary character and in a few days the veterinarian was again called, and administered a second purge with no result; on the contrary, the enlargement continued to slowly increase. About six weeks after the enlargement was noticed, the curving of the spine became manifest and continued until it reached its present condition; during this period and up to the present time the general health of the animal remained good. This being all the history that could be obtained, a number of veterinarians of New York and Brooklyn were asked to diagnose the case; their opinions were widely apart, and an attempt was made to purchase the animal in order to confirm some one of the many opinions given. The dealer refused to sell the animal for anything like a fair price, and the patient was returned. All traces of him were lost until March 3rd, when I was called to Long Island by letter, which stated that the animal I was to examine was affected with thumps continually, and also that this condition was not aggravated by work. On arriving at the farm I found my patient to be the same animal that I had examined in January, and in the same condition; the owner said he worked well, and had no difficulty in getting down or up. I then purchased him and gave orders for him to be sent to the hospital.

On March 16th he was destroyed for post-mortem examination, a large number of veterinarians of New York and Brooklyn being present.

All the organs of the abdominal and thoracic cavities were carefully removed and found to be normal, as was the inferior face of the vertebral column. The vertebræ were then removed, and each vertebra thoroughly cleansed and examined, with the following result, viz.: The bodies of the fifth, sixth, seven.

ighth, ninth, tenth, eleventh and twelth dorsal vertebræ howed lesions of periostitis, with more or less ulceration of heir articular surfaces, the greatest lesions existing on the osto-vertebral surfaces ; the corresponding ribs showed sim- ar lesions.

FŒTAL DYSTOKIA DUE TO HYDROCEPHALUS.

By J. H. Honan, V. S., Delphi, Ind.

On April 23d last, at 5 P.M., I was called thirteen miles nto the country to attend a case of difficult parturition. On rriving at my destination I found a large brown mare, eight ears old. While changing my costume for the work I earned that the mare had been trying to foal since about oon of the day before, and that morning the owner had sent or an empiric in the neighborhood, who had exhausted all is strength and ingenuity to effect delivery, as did all the eighbors who were accessible, but without result. I made n examination and found a dorso-sacral presentation, with ose turned forward, the occipital crest being the first part f the head felt. After careful manipulation I soon learned I ad a case of hydrocephalus to deal with. I therefore took y embryotome and excised the head at the occipito-atloid ticulation. After drawing off the water, which I did by e use of the trocar and canula, I succeeded in getting the ead, after which the body was easily delivered.

I brought the head to my office and cleaned off all the soft ssue, and now have the dry bony specimen, which measures follows: Circumference of cranial cavity, 26 inches ; diam- er in medial line, 9 inches ; diameter across between the vo frontal bones, 6 inches. This space was covered by a rous membrane under the skin, which was greatly dis- nded, having about two gallons of a yellowish water, which ndered it almost impossible to effect delivery until this fluid as drawn off. Aside from the above abnormality, all other rts were perfect.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT

BRONCHOCELE IN A SETTER—OPERATION BY ENUCLEATION—DEATH.

By A. J. HAMMERSTEIN, D.V.S.—(House Surgeon).

The physiology and pathology of this form of affectio have for years stimulated the investigation of physiologist and pathologists, and yet it may safely be affirmed that th last word has not yet been said concerning the functions an the pathological influences of the thyroid glands. It is t add to whatever may be already known one more fact whic may assist in satisfactorily solving the long-discussed questio that the present case is recorded. Like the majority of thos which have been reported, it ended fatally.

The patient was a male Irish setter, about eight years ol and weighing about eighty pounds. The bronchocele wa about the size of a closed fist, and was situated at the base o the neck, just anterior to the point of the right shoulder. Th enlargement was movable and not painful to the touch, a though to a certain degree it interfered with the functions o respiration and deglutition. All other functions of the bod were normal.

OPERATION.—The animal was secured and placed upon table, the hair removed from the enlargement, and the pa washed with a solution of bichloride of mercury, 1 per cen to 1,000. He was then placed under the influence of ethe and an incision made over the most prominent part of th tumor, from before backwards. The skin was then dissecte back and the cellular tissue separated from the enlargemen and the blood vessels requiring it ligated and severed. Th tumor was now easily removed from its cavity and the par again washed with the bichloride solution, and the edges the wound brought together by an interrupted suture. pad of oakum was then applied, and secured by a suitab bandage. The patient was then placed in the kennel, a bread soaked in milk was offered, of which he ate very litt but drank water freely. During the night he suffered so pain, which was shown by an occasional moan.

The next morning he appeared dull and could scarcely ove without assistance, his temperature being 103° F. The ound was dressed, and looked very well. Milk and also ater were given and freely partaken of in large quantities, ut the latter was immediately followed by vomiting, due to sympathetic gastric disturbance. The next day his temper-ure was 104° F., but although he appeared brighter the omiting still occurred. Opium and sub-nitrate of bismuth ith milk punch were then administered.

The third day following the operation his temperature se to 108° F., and he refused food and appeared dull and uggish, and stimulants were administered. On the morning the fourth day he was found dead, and a post-mortem ex-nination was held, which revealed nothing abnormal.

The tumor was irregularly elliptical, flattened from side side, and measuring seven and one-half inches in its larger d five inches in its shorter circumference, weighing five nces.

What was the cause of death? The operation had been successful as it could be, and care was taken to avoid in-olving or injuring the nervous structure connected with the ands, and yet this is the second case which within a few onths has appeared in the REVIEW, similiar in its history, its ture, its treatment, and I regret to say its result. Why should is comparatively simple operation, which has been success-lly performed in larger animals, be followed by such bad sults in the dog? Is there anything in the anatomical posi-on of the organ or its anatomical connections and relations at may account for the fatal result? Whatever it may be would seem that here is a problem which physiology might lp us to solve.

EXTRACTS FROM FOREIGN PERIODICALS.

a.—FRENCH JOURNALS.

TWO CASES OF LEUCOCYTHEMIA WITH MICROBES.

By M. A. LUCET.

Though the infectious nature of this affection, observed in 80 by Kelsch and Vaillard, has not been corroborated in the experiments of others, the author has observed two cases where the presence of specific microbes has been well established. The first was in a cow, destroyed as incurable, and in which the subdorsal chain of lymphatic glands was bosselated and hypertrophied, and formed large, grayish encephaloid tumors. The microscopic-bacteriologic examination of these revealed the presence of a number of microbes, immobile, thick, single or in clusters of two, three or four, both ærobic and anærobic, growing well on gelatine, gelose and potatoes; and which when inoculated to rabbits and guinea pigs produced death in from thirty-six to forty-eight hours, with congestive lesions of most of the organs.

The second was in a dog, six years old, which had large neoplastic tumors upon the membrana nictitans, and in which all the lymphatic glands, both deep and superficial, were hypertrophied and bosselated. The lungs, liver and kidneys also contained small tumors. The lymphademic nature of these was revealed by microscopic examination. A similar microbe was also discovered, which, though inactive on the guinea pig, killed rabbits in ten days by intra-venous injection only, giving rise to the formation of small whitish tubercles in the liver, spleen, kidneys and lungs.—*Journ. de Med. Vet. et Zoot.*

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INTESTINAL OBSTRUCTION RELIEVED BY RECTAL INJECTIONS WITH PRESSURE.

By M. Pecus.

In a case of this disease of forty-eight hours standing, and after the failure of all other means employed, the author injected four times in twelve hours seventy-five centigrammes of pilocarpine. Obtaining no result from this severe treatment he introduced the hose of a hydrant, having a strong pressure, into the rectum, and irrigated the intestines with this powerful douche. This was followed with an excellent result, a violent cathartic effect, and sudden relief.—*Ibid.*

POLYPUS OF THE PHARYNX IN A HORSE.

By Professor Labat.

A horse presenting all the symptoms of severe sore throa was also affected with frequent epistaxis. He was treate without success, and beginning to roar quite severely he was tracheotomized and the puncture of the guttural pouches on both sides was performed, but all without result. The discharge from the nose, the epistaxis, and the difficulty of deglutition continued to grow worse, and a fatal result was looked for at an early date. The veterinarian in attendance suspecting a tumor in the fauces, incised the soft palate in its length, and through the incision felt a growth attached above the larynx, hard and firmly adherent, and of the size of an apple. Professor Labat having confirmed the diagnosis, an operation for the removal of the tumor was decided on. The animal was thrown and placed on his back, with the head well extended, and the first rings of the trachea, the crico-tracheal ligament, the cricoid cartilage, and the crico-thyroid ligament were incised, as in the operation for the removal of the arytenoid cartilage in cases of roaring. The condition and size of the tumor could then be felt, and passing the chain of an ecraseur at its base it was cut off. The tumor was a pavimentous, obulated epithelioma.—*Revue Veterinaire.*

b.—ITALIAN JOURNALS.

SALIVARY CALCULUS IN THE STENO'S DUCT OF A DONKEY.

By Mr. G. Calabresse.

The subject was a donkey, eighteen years old.

The tumor was of the size of an egg, and was found on the eft side ; it was hard to the touch, and painless. The motions of the jaw were much interfered with, and the animal began to show the effects of this interference with the digestive functions. The extraction of the calculus was performed with the actual cautery, and the wound was dressed with simple antiseptic dressing, healing in about a month. The calculus had aken six years to develop to its present growth.—*Clinica Veterinaria.*

THE THERAPEUTIC USE OF SPIRITS OF TURPENTINE.

By Mr. Rabbaglietti.

The author claims that spirits of turpentine can be advantageously used in several affections, such as typhoid fever and influenza, when these are complicated with pulmonary troubles. It is also very beneficial in the treatment of rheumatic affections.

He reports a case of rheumatic lameness relieved in a few days by the internal administration of this drug. It acts with a well-marked antithermic effect, its antifebrile action being as powerful as that of quinine, antipyrine and salicylate of soda. A horse suffering with pleuro pneumonia received, during four days, an electuary of twenty-five gramms of spirits of turpentine, and fifteen of carbonate of magnesia, and though it became necessary to discontinue this treatment, on account of the irritation produced on the kidneys, the fever subsided rapidly, and the animal soon became convalescent.

Spirits of turpentine is also an excellent antiseptic, by reason of its absorbing a certain quantity of the water of the tissues, and being transformed into terpinol, which possesses most energetic antiseptic power.—*Giornale di Vet. Mil.*

FIBROUS SARCOMA OF THE SHEATH IN A STALLION.

By M. D. Piovesan.

The tumor occupied all the right side of the sheath, bounded posteriorly by the testicle, and in front near the preputial opening. It was very large, reaching the dimensions of a child's head, and to the touch seemed well circumscribed, and not adherent to the surrounding tissues.

The animal was thrown and secured as for the operation of castration, and the tumor was enucleated through a crucial incision of the skin, without much difficulty. There was but little hemorrhage, but two small arteries requiring to be secured with aseptic silk. The wound was well washed with a solution of corrosive sublimate and an antiseptic dressing of iodoformed ether was placed over it. The dressing was renewed daily, and the wound rapidly closed.—*Clinica Vet.*

FRACTURE OF THE CRANIUM.

By M. F. Conti.

A mare about to be secured for the purpose of dressing a wound at the poll, became frightened, reared and fell violently backwards, being stunned, and for some time remaining motionless. She was afterwards assisted to rise and was removed to a box stall, but died four days afterwards.

At the post-mortem, besides the inflammatory lesions resulting from the fall, an extensive fracture of the base of the cranium was discovered. On the right side of the occipital crest, and a little towards the middle, three lines of fracture were present. One, extending backwards, reached the left condyle of the occipital bone, and from thence continued sinuously to the foramen lacerum of the same side; another, reaching only to the right condyle, while the third separated the temporal bone from the occipital, and passed to the foramen lacerum of the right side. The basilar process and the body of the sphenoid, as well as the left styloid process, were also fractured.—*Giornale di Vet. Mil.*

c.—GERMAN JOURNALS.

By Richard Middleton, D.V.S., Philadelphia, Pa.

LYSOL IN VETERINARY PRACTICE.

The daily appearance of new antiseptic remedies upon the threshold of materia medica has a tendency to inspire a feeling of distrust among the constituency of the profession, which may only be dissipated by the publication of authentic reports of trials made by well-known members of the fraternity. It is highly probable that this feeling is responsible for the oblivion to which lysol has been relegated. It was only after the reports of Lemke and Director Straube of the hoof clinic in Berlin that we brought ourselves to use lysol. Our results were so decided that we abandoned the use of creolin and ac. carbolicum. Lysol is more intense in its operation, more reliable in its application and completely soluble in water—not merely saponifiable or mixable, as ac. carbolic or creolin. Small globules of the latter substance unite, and only when applied externally does it partially gratify expectations; this is equally true when the agent is injected hypodermically, the coherence being so powerful as to prevent or considerably retard absorption. This being the case, how may bacilli be annihilated or their produce neutralized? Those medicines whose nature is oleaginous are useless as disinfectants; only those agents which are notoriously soluble may be applied in all departments of therapy. This quality lysol possesses to the fullest degree, and should be welcomed by sanitarians and members of the medical profession as a chemical triumph. Before this was known chlorine water, raw carbolic acid and creoline were much in vogue.

The principle question which the introduction of this new disinfectant called forth, stated in a few words, is "will it destroy bacilli?" This must be answered in the affirmative. Experiments of Prof. Schottelins and Dr. Gerlach have proven that lysol is possessed of a greater disinfecting power than carbolic acid or creolin; these assertions have never been refuted. From my personal tests it is my opinion that its strong anti-bacterial quality has not been over-estimated, and that it is referable to its physical properties. We agree with Dr. Lemke that it is in every way a consummate substitute for corrosive sublimate. It has been our sad experience to see a few cases in which the latter antiseptic operated with toxic effect; one of these, a cow suffering from metritis, received a single injection, 1-2000, with fatal effect.

Straube states further that lysol is destined to play a significant part in the disinfection of cattle cars and infected stalls.

The foregoing prefaces our report upon several cases in which this new agent has been of signal service. The first patient had been punctured in the left fore foot. The horse was exceedingly lame and exhibited tetanic contractions of his general anatomy. After removing the shoe the foot was thoroughly pared out, the quarter rasped thin, and subsequently removed. There flowed therefrom a greenish-yellow pus and a portion of the deep softer tissues appeared necrotic and was isolated, exposing the os pedis. We then placed the foot in a one per cent. solution of lysol, and made two ʒ iij injections upon the left cervical region of a three per cent. solution. At night the soaking was replaced by a bandage moist ened in lysol solution. The next morning upon the removal of the latter, fresh granulations were exposed to view, with a minimum amount of suppurative product. The fever, which the day before had been 103°, fell to 101° ; the foot sustained a quota of the body weight, but the contractions remained unaltered. No swelling observable at point of injection. During the subsequent three days the same treatment was ordered. Convalescence, though slow, was nevertheless noticeable, and in one month the animal was put to work.

In the other three cases of tetanus no wound was patent by which the bacilli could secure entrance into the body. These each received daily subcutaneous ʒ iij injections of a three per cent. solution of lysol. Three drachms of a solution of the same strength were mixed in a quart of water at 85° to 96°; and the whole injected per funnel and tube into the rectum. From the beginning of the lysol therapy the tetanoid condition ceased to extend, and throughout fourteen days remained stationary ; after this time it regularly receded.

It is not the purpose of this article to advance lysol as an anti-spasmodic to be used in tetanus, but it must be admitted that it very materially aided in the recovery of four cases of tetanus. In morbus maculosis nothing is comparable to this agent ; not even the solution recommended by Dieckerhoff can approach it in completeness or achievement ; it stands alone, almost idiopathic remedy. In purpura two ʒ iij injections are given at one time once daily.—*Berl. Woch.*

NATURE OF FISH POISONING.

A. observed two consecutive cases of poisoning through the consumption of fish. The bodies of six persons who had partaken of fish yielded several species of bacteria. A few cultures possessed many characters in common, while others were distinguishable through the fish from which they were acquired. Animals inoculated with the cultures manifested symptoms similar to those observed in man.—*Centr. f. Bact. u. Par. Bd. x.*

THERAPEUTIC NOTICES.

Ramson has successfully applied apomorphine injections to cases of strychnine poisoning; the only objectionable feature of this procedure is the vomition induced. Apomorphine causes a general soporific influence.

Strychnine has lately been much recommended in opium poisoning.—*Deutsch. Med. Ztg.*

Gillepsie has secured results from injections of two to three drops of ac. carbolicum in arthritic rheumatism—first introduced by Senator.—*D. Med. Woch.*

Verneuil warns against subcutaneous injections of antipyrine; upon the ground that he has had repeated areas of gangrene at the point of medication.—*Aertz. Cent. Auz.*

Mikrovitsch urges naphthalin as a trustworthy anthelmintic. He gives children five to seven grains, adults 15 grains, and directly after administers of ol. ricini ℥ j.—*Tem. Med.*

Vian used the following for hemorrhages subsequent to exraction of teeth:

℞	Chloroformi,	ʒi,
	Ac. Tannici,	
	Mentholi aa,	ʒ js,
	Tinct. Ratanhiac,	ʒ vi,
	Aq. Destillat,	℥ xvi.

Thomas has seen hemorrhoids progress favorably under clysters of lukewarm water retained four or five minutes within the rectum; the water is afterward to be used cold The consumption of large quantities of meat is forbidden, but on the contrary fruit and a vegetable diet is encouraged.—*Aertz. Centr. Auz.*

Gubert reports nineteen cases in which injections of antipyrine caused a considerable decrease in the lactic secretion *Allg. Med. Centr.*

The following abortive treatment of coryza is pursued by Capitan. He advises a powder made of the following constituents to be blown into the nose:

℞ Salol pulv., gr. xv,
Ac. Salicyl., " gr. iii,
Ac. Tannici, " gr. ii,
Ac. Borici, " ʒ i,
M.

Sig.—Every hour for one-half a day.

This must not be used longer than half a day, or the free carbolic acid in the salol will cause a herpatic eruption upon the alæ of the nose.

Should it become necessary to continue this treatment for any length of time this powder must be diluted with chalk or the quality of the salol reduced to gr. iij—gr. vii. Antipyrine is also useful, though less effective, in the following prescription:

℞ Cretæ Præp., ʒ ij,
Antipyrine, gr. xv,
Ac. Boric Pulv., ʒ js,
Ac. Salicyl., gr. iij,
M.
Sig.—Use as a snuff.

Neither of these powders cause irritation sufficient to induce sneezing.—*Wien. Med. Presse. Allg. Med. Cent. Z.*

PASTEUR INSTITUTE.

SECOND ANNUAL REPORT.

Dr. Paul Gibier, Director of the New York Pasteur Institute, begs to inform you of the results of the preventive inoculations against hydrophobia performed at this institute during the second year of its existence (February 18, 1891 to February 18, 1892). During this time 574 persons who were bitten by dogs, cats and other animals, applied for treatment. These patients may be divided into two categories:

1st. In the case of 461 of these persons it was demonstrated that the animals attacking them were not mad. Consequently the patients were sent back after having had their wounds attended to during the proper length of time.

2d. In 113 cases the anti-hydrophobic treatment was applied, hydrophobia of the animals inflicting bites having been evidenced clinically, or by inoculation at the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs.

Indigents have been treated free of charge.

The persons treated were from New Jersey, 36; New York, 22; Massachusetts, 12; Connecticut, 8; South Carolina, 6; Texas, 5; Maryland, 4; North Carolina, 3; Missouri, 2; Ohio, 2; Pennsylvania, 2; Arkansas, 2; Alabama, 1; Georgia, 1; Iowa, 1; Louisiana, 1; Michigan, 1; Rhode Island, 1; Virginia, 1; Mexico, 1; West Indies (Curacoa), 1.

GENERAL REPORT.

The annexed table, based upon a similar one published every month by the Pasteur Institute of Paris (France), shows synoptically the work of the New York Pasteur Institute since its opening, which took place two years ago.

These 298 persons treated came from the following localities; New York, 103; New Jersey, 63; Massachusetts, 28; Connecticut, 19; Illinois, 9; North Carolina, 8; South Carolina, 7; Texas, 7; Maryland, 7; Pennsylvania, 7; Georgia 6; Missouri, 5; Ohio, 4; Arkansas, 3; Kentucky, 2; New Hamsphire, 2; Iowa, 2; Louisiana, 2; Virginia, 2; Rhode Island, 2; Maine, 1; Michigan, 1; Arizona, 1; Nebraska, 1 Minnesota, 1; Alabama, 1; Indian Territory, 1; Ontario (Canada), 1; Mexico, 1; Curacoa (West Indies), 1.

In addition to these 298 inoculated after they had been bitten, we may mention that eleven persons have been submitted to the prophylactic treatment in order to prevent some fatal inoculation during the accomplishment of their duty These eleven persons are the servants, the assistants and the director of the institute.

DEATH BY HYDROPHOBIA AFTER TREATMENT.

Miram Adams, five years old, of South Framingham Mass. Badly bitten July 14th, 1891, in nineteen places by

		A			B			C		
Bites inflicted on the head and on the face	simple		4	8		3	3		11	19
	multiple		4						8	
Cauterizations	*efficacious*									
	non-efficacious	3						3		
No Cauterization		5			3			16		
Bites inflicted on the hands	simple		35	54		41	58		40	66
	multiple		19			17			26	
Cauterizations	*efficacious*	1								
	non-efficacious	22			19			22		
No Cauterization		31			39			44		
Bites inflicted on the limbs and on the body	simple		9	14		18	25		24	28
	multiple		5			7			4	
Cauterizations	*efficacious*							1		
	non-efficacious	6			9			6		
No Cauterization		8			16			21		
Clothes torn		4			9			1		
Bites inflicted on bare parts		1			8			2		
Bites inflicted on different parts of the body				6			9			8
Cauterizations	*efficacious*							1		
	non-efficaci us	1			4			2		
No Cauterization		5			5			5		
Clothes torn		1			1			3		
Bites inflicted on bare parts		3			3			1		
Amounts				82			95			121

	A	B	C
General Total		298	

The column A refers to person bitten by animals in which hydrophobia has been evidenced by experimentation or by the death of some other persons or animals bitten by them; column B to persons who have been wounded by dogs having been recognized mad by the clinical or veterinary examination; and column C to cases in which hydrophobia could only be suspected, as the animals had disappeared or were killed instantly and their bodies thrown away.

dog, recognized to be mad. Treated from July 15th to Au gust 1st. Symptoms of hydrophobia appeared six days lat (August 6th). Died August 9th, 1891.

Three other persons (two sisters of the patient and a man bitten by the same dog, who received the same course treatment, are now enjoying good health.

R. D. Morton, thirty-five years old, of Columbia, S. C engineer. Two days before commencing his treatme (August 5th, 1891), he had been severely bitten by a rabi dog on the right hand and wrist, and was treated from th 5th to the 22d of August, 1891. Died of hydrophobia tw months and two days after (October 24).

J. S. T. Earl, forty-two years old, of Turners, N. Y., fa mer. On September 20th he was severely bitten by a wa dering dog on the right forearm, on which were twelve dee cuts and five abrasions of the integument. Seven small pig and their sow, bitten by the same dog, died of hydrophob between the 5th and 10th of October. Earl applied for trea ment only four days after the accident, and was treated fro September 24th to October 10th. He died of hydrophob on the 1st of January, 1892. He complained chiefly at fir of his right arm "hurting by spells."

PERSONS WHO DIED OF SOME INTERCURRENT DISEAS DURING OR AFTER TREATMENT.

H. W. Stevens, thirty-three years old, physician, of Broo lyn. He came on January 26th, 1891, to the institute, t gether with Jno. Carroll, Pathological Janitor at New Yo Hospital. Both of them had some cuts or sores on the fi gers, and were afraid that they had inoculated themselv with the virus of hydrophobia in performing the post-morte examination of a man who died of this disease the 22d January, in Chambers Street Hospital. When Dr. Steve commenced his treatment, which was of an ordinary intensit he was already ill; three weeks previously he cut himself the left forefinger while making an autopsy. This wou was followed by a lymphangitis of the hand and arm a suppuration.* Before this was healed up he made many n

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* Report given in writing by the patient himself.

psies. He inquired at first whether sulphate or quinine
uld interfere with the treatment, *as he had chills.* He grew
aker every day, but kept on his duty, though he was ad-
ed to take a rest. Two days before the end of the treat-
nt he felt very feeble and the last day he was still worse.
polymyelitis developed and he died on February 23d.

Frank McCoy, thirty-one years old, of Port Jervis, N. Y.,
rber. On March 7th, 1891, he was bitten on the lower lip
his own dog, which was recognized to be affected with
drophobia. The wound was large and bled considerably;
was cauterized about twenty minutes afterwards with ni-
te of silver (inefficacious). McCoy applied for treatment
ly five days later (March 12th). His treatment was not
f completed when he went to Liberty Island on a cold and
ny day. On returning home he went to bed with chills
d fever, the effect of a penetrating cold so contracted. He
s attended by Dr. R. W. Buchanan, of New York, who
rtly after cupped his left side; the patient was then suf-
ing from pneumonia of an infectious form. On the 3d of
ril he seemed somewhat better, and his relatives took him
Port Jervis, where he died on April 8th, 1891.

Jonathan Knowles, sixty-three years old, of Taylorsville,
., farmer, came for treatment on December 12th, 1891. Was
ected with bronchitis and kidney trouble. He was obliged
keep in bed a few days after, as he had contracted the
ppe complicated with pulmonary œdema. He died on
cember 24th.

By examination of the foregoing figures one may see that
results obtained at the New York Pasteur Institute are
out the same as those reported by kindred institutions. It
unnecessary to comment upon them, as they will be well
preciated by any unprejudiced mind.

Let us remember that last year forty-two deaths caused
hydrophobia have been formally reported of persons bit-
by rabid animals, and who were not submitted to the in-
ulations. This makes about eighty deaths for the period
luded in our statistics, during which three persons died
spite of the treatment. And without taking an exception

for the patient (Earl) who came only four days after his terrible fight with the dog, if we consider as they do abroad that this treatment has produced its full effects only fifteen days after it has been completed, we see that the percentage of those who died after the fifteen days following the inoculation has been only two out of 298 or 0.66 per cent.

Among the 298 persons treated, 177 had been attacked by animals undoubtedly rabid; if we consider, again, that statistics indicate 25 per cent. as a low percentage of deaths after bites inflicted by hydrophobic dogs; and, then, counting only 177 instead of 298 persons bitten, we ought to have had not two or three cases of death, but at least 44. Moreover, 123 persons among the 177 bitten by hydrophobic animals had their wounds inflicted on the face, the head or the hands. We know that bites of this nature are followed by hydrophobia in a much larger proportion, say at least 40 per cent. The number of deaths ought to be, then, no less than *seventy* among the persons so bitten who came from the different parts o the country to submit themselves to the Pasteur treatment.

New York, April, 1892.

BIBLIOGRAPHY.

PARASITES AND PARASITIC DISEASES OF THE DOMESTICATED ANIMALS. BY L. G. NEUMANN, Professor at the National Veterinary School of Toulouse. Translated and edited by George Fleming, C.B. LL.D., F.R.C.V.S. 8 vo., cloth, 873 pages, 365 illustrations, $8.00. Wi liam R. Jenkins, 851 and 853 Sixth Avenue, New York.

It was but three years ago that the first edition of thi work was published by the French author, and the succes which was then predicted for it has proved so positive that a second edition soon became necessary. The value and importance of the work was at once recognized by one of ou best English writers, the well-known editor of the *Veterinary Journal*, Dr. George Fleming, to whom English veterinary literature already owes so much. His translations of Chauveau's standard treatise on anatomy, and his book on obstetrics, or sanitary medicine, and on operative surgery, without men

oning the productions of his pen which have appeared in
amphlet form, or in his own journal, have established Dr.
leming's position as one of the foremost contributors, and
e might also say one of the most prominent benefactors of
eterinary science of the present time. And in the present
ıstance, in his selection for translation of this second edition
f Neumann's important work, he has shown once more
ow earnest and constant is his desire to benefit his English-
peaking brethren by enabling them to take advantage of the
iscoveries and experiences of the best authors and practi-
oners of other tongues and countries. As long ago as 1876,
ealizing the need of such, Dr. Fleming had contemplated
nd commenced an original work on the same subject, but
aving been prevented from completing it by other engage-
ıents the design was relinquished. But not so his interest
ı the subject, and the translation now under notice is the
vidence of his zeal in the studies which it embodies and
lucidates.

Beginning with an introduction comprising a general con-
deration of the subject of parasites, and describing particu-
ırly the degrees and modes of parasitism, and the develop-
ıents, symptoms and prognosis of parasitic diseases, with
ıeir prophylactic and curative treatment, etc., he enters
nmediately upon the regional consideration of parasites,
eating in order of those of the skin, of the digestive appara-
ıs, of the serous membranes, of the respiratory organs, of
ıe circulatory system, of the muscles, connective tissue and
ones; of the nervous centers and the organs of sense, and
ıstly, of the genito-urinary organs. The order followed in
ıese descriptions is the same in each case, giving the history
f the subject, a description of the parasite, the symptoms
nd lesions by which they are detected, their prophylaxy and
ıeir treatment. No less than three hundred and sixty-four
ell drawn figures illustrated the well-written text, and the
ıanner in which the book is brought out is characteristic of
ıe publishers, the reliable old house of Baillere, Tindall &
ox, of London.

When the French edition was published the veterinary press was unanimous in praising the work, and we have no hesitancy in predicting for Dr. Fleming's last attempt a similar success. If not quite, it is one of the most valuable contributions made to English veterinary literature for some years. The veterinary profession at large, from the oldest practitioner to the senior students of our veterinary colleges, will find in it all that has been written on the subject by European investigators, arranged in so clear and orderly a manner as to render the study of parasitism easy and interesting, "*Parasites and Parasitic Diseases*" is bound to find a place in every complete veterinary and medical library.

COLLEGE NEWS.

AMERICAN VETERINARY COLLEGE.

Professor R. S. Huidekoper has withdrawn his name from the list of teachers of this institution, and on recommendation of the Faculty Dr. W. J. Coates has been appointed by the Board of Trustees to the Chair of Operative Surgery. Professor Coates thus becomes a member of the governing faculty.

HARVARD UNIVERSITY—VETERINARY DEPARTMENT.

The new advertisement of this department gives the information that two clinical lecturers have been added to the corps of instructors. The appointees are Drs. L. H. Howard and H. T. Leonard. Dr. W. Labaw is assistant surgeon to the hospital.

MUSEUM OF THE AMERICAN VETERINARY COLLEGE.

The museum has received of late a nice addition by the presentation of numerous specimens made by Dr. E. Hanshew of Brooklyn. A number of exostosis of all forms and sizes were received; several of the hocks, spavins and ankylosis of the entire joints; a number of ring-bones; several ankylosis pasterens; splints of all sizes and dimensions; an enormous intestinal calculus, and a number of small ones; a few specimens of fractures. All were received in good condition, and form a valuable addition to those already collected.

SOCIETY MEETINGS.

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The eighth annual meeting of the New Jersey Veterinary Medical Association was held at the State Street House, Trenton, N. J., on Thursday, April 14, 1892.

Meeting called to order at 11:30 A.M by President R. R. Letts, of Hoboken. Secretary W. H. Cooper, of Jersey City, called the roll, and the following members answered the call: J. W. Hawk, Newark; J. C. Dustan, Morristown; B. F. King, Little Silver; W. B. E. Miller, Camden; John Kehoe, Lyndhurst; S. Lockwood, Woodbridge; W. Runge, Newark; W. H. Cooper, Jersey City; R. O. Hasbrouck, Passaic; R. R. Letts, Hoboken; J. Gerth, Jr., Newark; T. Declyne, New Durham; J. M. Everitt, Hackettstown; M. M. Stage, Dover; A. W. Oxford, Naughbright; H. Exton, Washington. Visitors: Dr. Ridge, of Penn.; Dr. Sellers, of Camden; Franklin Dye, Secretary of State Board of Agriculture of New Jersey.

A quorum being present, the minutes of the previous meeting was read and approved.

President Letts made his annual address.

Secretary Cooper read his annual report, which was accepted and approved.

Treasurer King read his annual report, which was accepted and approved.

Applications for membership: J. N. Wittpenn, of Jersey City; H. W. Elliott, of Newark; Frank Lippincott, of Swedesboro; B. L. Drummond, Woodbridge.

Dr. Gerth moved a recess be taken for the Board of Censors to make their report. Seconded and carried.

The Chair appointed Drs. DeClyne, Dustan and Gerth to fill vacancy in Board.

Meeting again called to order, and Dr. Hawk, Chairman of Board of Censors, made the following report:

The Board recommend for active membership: Dr. H. W. Elliott (graduate of New York Veterinary College), of Newark; Dr. B. L. Drummond (graduate of American Veterinary College), of Woodbridge.

Dr. J. N. Wittpenn (graduate of American Veterinary College) and Dr. Frank Lippincott lie over until next meeting.

Moved that the report be received and complied with. Seconded and carried.

Moved that as there was no opposition to Drs. Elliott and Drummond, the Secretary cast ballot. Seconded and carried. Chair appointed Dr. Miller as teller; Secretary cast ballot, and teller announced Drs. Elliott and Drummond as being elected.

The Chair introduced the newly-elected members.

The Chair also introduced Dr. Ridge of the Pennsylvania Veterinary Medical Association.

The following gentlemen made reports: Drs. Dustan and Runge, as delegates to the United States Association; Dr. Miller, delegate to the Pennsylvania Association.

Secretary made report on Dr. Davinson of Asbury Park. Moved to lay on the table. Seconded and carried.

Owing to the absence of Dr. Herbert, and sickness of Dr. Schuppan, the essayists for the meeting, a paper on "Colic" was read by Dr. B. F. King, of Little Silver, for which a vote of thanks was given.

Letters of regret was read.

The letter of Dr. Smith was read and ordered on the table.

Motion to drop the names of Drs. Dimond and Wilkinson from the roll. Ayes and nays being called, motion was lost.

Dr. Miller moved that the names of Drs. Dimond and Wilkinson be placed on the retired list. Seconded and carried.

Motion to take up delinquent members. Seconded and carried.

Dr. Gerth moved that the Secretary and Treasurer go over the books and meet the Board of Trustees and make a report at the next meeting. Seconded and carried.

The Chair introduced the following gentlemen, who responded to the Association. Franklin Dye, Secretary of the New Jersey State Board of Agriculture; Dr. Ridge, delegate from Pennsylvania State Veterinary Medical Association; Dr. A. T. Sellers, delegate from Keystone Veterinary Medical Association.

Discussion on glanders by Drs. Hawk, Gerth, Runge and others. On tuberculosis of the Gillingham herd of Pennsylvania, by Drs. Miller, Dustan, Sellers, Ridge, Gerth and others.

Motion to proceed to the election of officers. Seconded and carried.

Motion by Dr. Gerth to appoint a committee of five by the Chair to make nomination. Seconded and lost.

The President asked Dr. Miller to take the chair.

Dr Miller in the Chair asked for nomination for President.

The following are the new officers for the ensuing year: President, J. C. Dustan, Morristown; First Vice-President, W. Runge, Newark; Second Vice-President, S. Lockwood, Woodbridge; Secretary, W. H. Cooper, Jersey City; Treasurer, B. F. King, Little Silver. Board of Trustees: Chairman, W. B. E. Miller, Camden; J. W. Hawk, Newark; R. O. Hasbrouck, Passaic; J. Kehoe, Lyndhurst.

Dr. Miller asked Dr. Letts to the Chair, who after taking the Chair made an address to the Association, and congratulated Dr. Dustan and introduced him to the Association.

Dr. Dustan on taking the Chair made an address to the members. The newly elected members were introduced and responded.

Adjourned for dinner.

Afternoon meeting called to order by President Dustan.

After a general debate and reporting of numerous cases the Chair made the following appointments: Essayists for the next meeting—Drs. DeClyne, Schuppan, Gerth and Drummond. Delegates to the United States Veterinary Medical Association—Drs. Cooper, King and Runge. Delegates to the New York Veterinary Medical Association—Drs. Gerth, Hasbrouck and De Clyne. Delegates to the Pennsylvania Keystone Veterinary Medical Association—Drs. Miller, Cooper, Hawk and Letts.

Adjourned to meet at Newark, N. J., August 11th, 1892.

W. H. Cooper, *Secretary.*

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, March 23rd. President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Becket, Burr, Haddock, Harrington, Howard, Lee, Marshall, Osgood, Skally, Winchester, Parker and the Secretary. Honorary member, Dr. Stickney. Visitors, Dr. La Baw and Messrs. Fowle, Murch and Maloney, senior students at the Harvard Veterinary School.

Records of the last meeting read and accepted.

The Executive Committee reported favorably upon the credentials of Dr. W. L. La Baw, presented at this meeting.

The committee appointed to report upon arrangements for the United States Veterinary Medical Association, in Boston, next September, gave an account of what each member of the committee present had done. The Chair then stated that a Committee of Arrangements from the United States Veterinary Medical Association had been appointed by President Huidekoper, with full powers to act; but it would be glad to receive any assistance or suggestions from members of the Massachusetts Veterinary Association's committee, or from individual members of the Association. Quite a discussion then ensued upon the best place to hold the meeting, the entertainment our Association would offer the national body, and the best means of raising funds therefor.

Dr. Lee, as treasurer of a corporation, asked for advice from the Association as to the proper means for the Boston Veterinary Hospital to pursue in regulating its charges. Competing with the Veterinary Department of Harvard University, it is found necessary in some instances to cut rates; that is, subscribers paying $10 a year to the Harvard Veterinary Hospital are entitled to have horses under treatment kept at $1 a day; the Boston Hospital charges $1.50 per day for each horse, but a number of the subscribers to Harvard Veterinary Hospital who would patronize the new hospital at $1 a day will not pay $1.50, so that it is necessary for the Boston Veterinary Hospital to take horses belonging to subscribers to the Harvard Veterinary Hospital at the same rates, that is at $1 per day for each horse. After a short discussion Dr. Winchester rose to a point of order, asking the Chair if specific charges should not be brought in writing, if there were any charges to be brought up over which this Association had any ruling.

The Chair ruled that if there are any charges to be brought forward they should be brought in a regular way.

Dr. Winchester moved that the Association hold its annual meeting at Young's Hotel. Also that a committee be appointed by the Chair to take charge of the details, a dinner to follow the meeting, which is called for 5:30 o'clock. Seconded by Dr. Osgood. Carried.

The Secretary read a letter from Dr. W. T. Russell, of Nashua, New Hampshire, asking if members could be admitted to the Association who did not reside in Massachusetts.

The Secretary was instructed to see the Commissioner of Corporations and find out if the Massachusetts Veterinary Association can legally admit non-resident members ; if it can then he is to send Dr. Russell an application blank, in order that the Association can take action in the matter.

The Secretary then reported that Drs. Blackwood and Marshall had each attended more meetings during the year ending April, 1891, than any other members, but that both had been to an equal number of meetings ; which was to have Dr. Lee's prize tooth rasp ? It was finally decided to consult their respective records of attendance for the year ending April, 1892, and settle the matter in that way.

The Secretary then asked instructions as to whether the Association's accumulation of veterinary periodicals should be bound or not? Moved by Dr. Osgood, seconded by Dr. Bryden, that these magazines are bound. Carried.

Dr. Osgood moved that the Association subscribe to McFadyean's *Journal* for this year, and that, if possible, the Secretary get the back numbers. Carried.

Dr. Howard then announced that the committee to arrange the annual meeting would be Dr. Winchester, Chairman, with Drs. Lee and Osgood.

Dr. Marshall brought up the topic of death to animals by electric shock, and asked for views of the members present upon the subject. Very little information was elicited, until Dr. Winchester advised all interested to refer to the exhaustive report of the New York Board of Health upon the matter.

Meeting then adjourned.

The annual meeting of the Massachusetts Veterinary Association was held at Young's Hotel, Boston, Wednesday evening, April 27th, 1892, at 5:30 o'clock. President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Burr, Emerson Harrington, Hitchings, Howard, Osgood, Peterson, Saunders, Winchester, Winslow, Hitchcock, Parker and the Secretary. Honorary member, Dr. Stickney. Guests, Hon. Levi Stockbridge, Chairman of the Massachusetts Cattle Commission, and Dr. Geo. H. Bailey, veterinarian of the Maine Cattle Commission. Dr. W. L. La Baw was also present and was elected to membership during the meeting.

Records of the previous meeting read and accepted.

The Secretary reported that Dr. Blackwood had attended more meetings for the year 1891 and 1892 than Dr. Marshall, and that he therefore was entitled to Dr. Lee's prize rasp.

Dr. Winchester, as a member of the Committee of Arrangements for the annual meeting of the United States Veterinary Medical Association in Boston next September, reported that there would probably be one hundred members present, outside of the members of the Massachusetts Veterinary Association, and that perhaps it would be better to arrange for meeting in some small hall rather than at Young's Hotel. He also believed that any entertainment offered them by our State Association should be provided for by voluntary contribution, rather than by assessment.

Dr. Howard read a letter from Secretary Hoskins, of the

United States Veterinary Medical Association in which he said that it was hard to give an exact estimate of the number to expect at the September meeting, but thought that one hundred might serve as a basis to figure upon.

Dr. W. L. La Baw was elected a member by eleven unanimous votes.

Dr. Winchester moved that all officers be elected by ballot. Seconded by Dr. Winslow. Carried.

Balloting was then proceeded with, Dr. Winslow acting as teller, an informal ballot being first taken, followed by a formal one, with the result of electing the following board of officers for the ensuing year:

President, L. H. Howard, D.V.S.; First Vice-President, Alexander Burr, M.D.V.; Second Vice-President, Edward C. Becket, M.D.V.; Secretary and Treasurer, Austin Peters, M.R.C.V.S. Executive Committee, F. H. Osgood, M.R.C.V.S., Daniel Emerson, M.D.V., Thos. Blackwood, D.V.S., Chas. Winslow, D.V.S., Wm. E. Peterson, M.D.V.

The new Executive Committee reported favorably upon the credentials of Dr. F. B. Carlton, of Salem.

The Treasurer read his annual report, which was accepted upon the motion of Dr. Winchester.

The meeting then adjourned to the dining room, where the annual dinner was partaken of, Dr. Bryden acting as toastmaster. A very jolly evening was passed, the members remaining until the *wee sma' hours.*

AUSTIN PETERS, *Secretary.*

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, May 25th at 7.30 o'clock, President L. H. Howard in the chair.

The following members were present: Drs. Blackwood, Bunker, Becket, Burr, Hadcock, Hitchings, Howard, Marshall, Osgood, Saunders, Winchester, Hitchcock, Parker, LaBaw, and the Secretary.

Honorary members: Drs. Stickney and A. Liautard, Dean of the Faculty of the American Veterinary College.

Guests: Drs. H. D. Atwood and W. H. Brownell, both of Brockton, and Messrs. F. H. Maloney, G. F. Quinlan, A. L. Murch, James Marshall and S. O. Fowle, senior students at the Harvard Veterinary School.

Records of the last meeting read and accepted.

Committee reports: Dr. Winchester reported for the Committee of the Association to arrange for the entertaining of the United States Veterinary Medical Association next September, that the best way of doing so, perhaps, would be to arrange for a sail down the harbor, with a collation on board, the expense to be met by voluntary subscription on the part of the members. He had therefore prepared a subscription paper for those who desired to do so to sign.

Dr. Bunker, as a member of the committee to arrange for invited guests, said he had not come prepared to make a final report, but thought the chairmen of some of the Boards of Health in our larger cities should be invited.

Dr. Saunders, as the member of the committee to inquire into the expense of chatering a boat for the day, reported upon what he had done.

A general discussion by various members upon arrangements for the occasion followed.

The name of F. B. Carlton, M.D.V., of Salem, was balloted upon for membership. Fifteen votes were cast, all in the affirmative, and Dr. Carlton was therefore declared elected.

The following application for membership was received: Wm. Stinson, D.V.S., of Chelsea, filed his application with the Secretary, Dr. W. A. Hitchcock presenting his credentials. Dr. Osgood, as Chairman of the Executive Committee, reported that the credentials were all right, and Dr. Stinson's name was laid upon the table under the rules, to be balloted upon at the June meeting.

Dr. Osgood moved that an Auxiliary Reception Committee of ten be appointed by the chair to assist in taking care of our guests next September. Seconded by Dr. Bunker. Carried.

Later in the evening the President announced the follow-ıg members of the Association to serve upon this committee:)rs. F. H. Osgood, Chairman, Thos. Blackwood, W. Bryden, . C. Becket, W. H. Hitchings, Alex. Burr, Chas. E. Haddock, Daniel Emerson, W. A. Hitchcock and John M. Parker.

In reply from a question by Dr. Bunker, Dr. Winchester ıid that Dr. Howard and himself, together with Dr. Hoskins, f Philadelphia, were a committee from the United States 'eterinary Medical Association to arrange for the meeting, ıd that the work of procuring a hall devolved upon them ıd not upon any committee of the Massachusetts Veterinary ssociation.

Dr. Liautard, the honored guest of the evening, then read very interesting paper upon "Professional Ethics."

Dr. Marshall's views agreed with Dr. Liautard's.

Dr. Osgood endorsed the paper, thinks we ought to have three years' graded course, and a standard of veterinary lucation recognized everywhere. He did not think that e could get a uniform standard in all the schools, but thinks ıat certain schools, recognized as *par excellence*, might create standard.

Dr. Parker thinks that we should do all in our power to evate the profession, and agrees with Dr. Osgood in his iews.

Dr. Winchester thinks that in the Massachusetts Veteriıry Association the members have, in most instances, a roper idea of what professional ethics ought to be. That is, most respects our members stand well in point of ethical ehavior. He also thinks that the elevation of the profession epends largely upon the members as individuals.

Dr. Liautard said that in looking over the Union he thinks ıe students are not so much to blame for the condition of ıings as are some of the older men in the way they behave, ıd the example they set. If we set about securing a Nation- Board of Examiners, he thinks the interstate law may be ıe hardest thing to overcome, but thinks it best to try and ɔ something while the profession is young and its members re few. It may take many years to bring about the change. 'e can do more while we have only ten schools, than by waiting until we have twenty, or perhaps two in every State.

Dr. Osgood is afraid we cannot get the same protection granted by every State to members of the profession ; that is why he thinks graduates of different schools will carry different weights.

Dr. Winchester thinks that everything must have a beginning, and that any advance is generally brought about by a few men. He also believes that some schools, by means of many teachers, can teach more in two years than others with a few instructors can teach in three or four years.

Dr. Osgood asks if more time is not desirable.

Dr. Liautard thinks more time is desirable, if possible.

Dr. Saunders compares students' heads upon entering college with empty spaces, and the instruction they receive with material to fill these spaces, and is of the opinion that "if you put out the stuff you will fill up the room."

Dr. Bunker likes Dr. Liautard's paper, as it has taken us out of our usual rut. He is proud to be a graduate of the American Veterinary College.

The "Frenchman" has always been square and honest and if his medicine is sometimes bitter, still it agrees with us

Dr. Bunker moves that the essayist be accorded a vote o thanks for his interesting paper. Seconded by Dr. Saunders Carried.

Dr. Bunker then read a paper reporting several cases h had had during the winter, in his practice, as follows :

Case of paralysis of the throat, in a horse.

Case of cancer of the liver, in a dog.

Case of tuberculosis of the liver, in a bull ; specime shown.

Case of mummified fœtus, in a cow, specimen shown.

Meeting adjourned.

AUSTIN PETERS, *Secretary.*

EASTERN IOWA VETERINARY MEDICAL ASSOCIATION.

The Eastern Iowa Veterinary Medical Association held i regular meeting at the Grand Hotel, Ceder Rapids, Marc 31, 1892, Drs. J. W. Scott, J. D. Inger, P. Malcom, W Drinkwater and J. T. Kennedy being present.

The discussions were animated and instructive.

Five new members were received.

Adjourned to meet in Ceder Rapids, the last Thursday in ly, 1892.

J. T. Kennedy, *Secretary.*

WYOMING VETERINARY MEDICAL ASSOCIATION.

A meeting of veterinary surgeons was held at Scranton, ., March 25th, at 7:30 P. M., at the Lackawanna Valley ouse, to organize a veterinary society.

A permanent organization was effected, to be known as e Wyoming Veterinary Medical Association.

This Society is organized for the benefit especially of all terinarians practicing in the northeastern part of Pennsyl- nia. The objects of this Society are friendship, mutual im- ovement and the elevation and furtherance of the cause of terinary medicine and surgery.

The following officers were elected: President, Geo. B. bois, Wilkes-Barre; Vice-President, Edgar Sturge, Scran- ; Secretary, Jacob Helmer, Scranton; Treasurer, Herman usser, Scranton.

The following members were enrolled: J. H. Timberman, ilkes-Barre; Edgar Sturge, Scranton; Herman Hausser, ranton; Fred. S. Hewitt, Towanda; R. C. Helmer, ranton; H. L. Mavsack, Tunkhannock; G. B. Dubois, ilkes-Barre; Jacob Helmer, Scranton.

The following gentlemen, not able to be present, authorized ir names to be enrolled: J. F. Butterfield, Montrose; J. Sitterly, Carbondale; Chas. M. Bailey, Towanda; H. ckenberger, Pittston; W. S. Niles, Pleasant Mount.

A constitution and by-laws was adopted.

The next meeting will be held for work at Wilkes-Barre, Saturday evening, April 23rd.

Jacob Helmer, *Sec'y.*

CORRESPONDENCE.

"THE DOG, IN HEALTH AND IN DISEASE."

itor of the American Veterinary Review:

Dear Sir.—In a notice in the last number of your journal

of the work on the dog which I have recently published m
reviewer says:

“If, however, ‘Comparative Physiology’ has succeede
in winning a success with the students of veterinary med
cine, we fear that ‘The Dog, in Health and Disease,’ wi
require a longer time to secure an equal result. This is n
because of any inferiority on the part of the book itself, b
because it fails to include certain matters which investigato
and students in canine pathology would naturally expect t
find in a new work which is destined to compete with thos
of Youatt, Hill, Steele and others, already and so lon
in vogue.

“The author, however, warns us in his Preface that ‘t
book is by no means intended for students and practitione
of veterinary science *alone.* It is meant for all intellige
persons who breed and keep the animal.’ This deprecato
caution naturally relieves us from the task of further cri
cism on the Second Part, which forms nearly the latter h
of the book”

I have never before replied to a review of any of my wor
because in most instances they have been treated as liberal
as I could expect, but the above statements are so vague a
at the same time so misleading that they are mischievous.

My experience as a teacher of canine medicine has c
vinced me that unless students are specially interested in do
as dogs—their varieties, points and what pertains to th
care, etc. in health, they are not likely to become very ent
siastic over the diseases of this animal nor likely to secure t
confidence of owners of valuable dogs at least, when they en
on practice. Hence I endeavored to produce a work o
new plan, that should be the most comprehensive, modern a
scientific extant, and your review is the first that has give
any other place.

I have looked in vain in the works my reviewer names
what my book fails to include that is found in those wor
on the contrary, my work treats of many subjects ne
before discussed in any work on the dog presented to the
erinary profession.

To the second paragraph quoted from the review I es- cially object. It must be clear to every one who has fol- wed the history of medicine, that with the spread of intelli- nce on medical subjects better days have come for both the actitioner of human and of canine medicine. Where is the terinarian best off to-day? Is it amid ignorance or in those mmunities of greatest intelligence? So that if my work nds to cause the dog to be more esteemed and attracts the tention of intelligent people it cannot fail to advance the terests of veterinary medicine.

It is true I did offer the work, *as a whole*, to the three asses enumerated in the preface, but my reviewer, with an genuity of a kind that would do credit to a Mephistopheles, troduces this quotation as if it applied especially to the Sec- d Part, which deals with disease. Naturally, this is the rtion of the book that the non-professional reader will find ost difficult to assimilate, but it may teach him enough to ow how to value the services of a really competent expert; it does that and no more the profession will not suffer.

If Newton had prefaced his *Principia* with the remark at the work was intended for mathematicians and intelligent ople, the quality of the work would not have been altered, r would a reviewer have been "relieved from the task of rther criticism."

I wish to say nothing derogatory to the works that my viewer puts in invidious comparison. They served a good rpose in a cruder period of medicine. However, I assure m that he need have no fears of the success of the book, as sale to all classes has been very large; and I will ask the aders of the REVIEW to examine the work for themselves d decide whether it cannot compete with those of the past, whether, to use the words of another journal (*Bacteriologi- World*) edited by a distinguished veterinarian, "It is by the best English work published on this subject up to te."

Truly yours,

WESLEY MILLS.

SUNDRIES.

BURNS.—The following is an excellent dressing for burns

℞ Campho-Phenique, ℥ j.
Lanolin,
Ung. aquæ rosæ, aa ℥ j.
M.

Sig.—Apply two or three times a day.

—*Weekly Medical Review, March* 12, 1892.

THE WORLD'S COLUMBIAN EXPOSITION.—Send 50 cent
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sition, with elegant Engravings of the Grounds and Buil
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advance of its opening. Also, other Engravings and printe
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J. POE, V.S., Knoxville, Tenn.

AMERICAN VETERINARY REVIEW,

JULY, 1892.

EDITORIAL.

ACTINOMYCOSIS.—The subject of actinomycosis has of late received a great deal of attention from American veterinarians, with the result of giving rise to the expression of very contradictory opinions which were freely exhibited pending the trial held last year in Peoria, Ills. We have impartially reported all the various theories and arguments propounded during the pendency of that memorable event, and have, we think, done justice to all the parties professionally interested in the matter without reference to the shades of opinion, or theory, or school they may have espoused, or whether in the eye of the law they may have appeared on the right or the wrong side of the case. In the publication of one of the various critiques on the subject we were obliged to express our opinions in relation to some different considerations connected with the case on our part, and explained that we were giving the subject a great deal of thought, and that we were not yet well prepared to change the opinion we had expressed at the trial.

In continuing our investigations our attention has been directed to the publication of some notes on actinomycosis presented to the *Societe Centrale de Medecine Veterinaire*, by Professor Nocard; and as his opinion on all matters pertaining to our science is accepted as of the highest authority, we have much pleasure in making certain citations from his expression of views, which may prove interesting and important in connection with the subjects involved in the Peoria trial. After a few allusions to the presence of actinomycosis in various parts of the world, and a quotation from the statistics of the disease, which shows a percentage of a comparatively small number in France, 95 cases only having been discovered out of 131,398 animals, or a proportion of 0.72 per thousand, the professor makes a few remarks upon the frequency of the seat of the actinomycotic lesions, and the location of the disease in certain organs, as the tongue, the bones of the head and the lungs, and enters upon the most interesting part of his communication, viz., the treatment of the lingual form of the affection, which, adopted by Professor Thomassen, of Utrecht, and recommended by him as early as 1885, had proved most satisfactory to him and the few who had practised it. The treatment of "actinomycotic glossitis," which is known by its symptoms and the peculiar condition of the organ affected, consists simply in the administration of iodide of potassæ, with which the local application of tincture of iodine may be combined. The history of several observations on this subject have heretofore appeared in the REVIEW.

The communication of Professor Nocard concludes with the etiology and mode of entrance of the parasite, which, for many reasons, ought to be considered as being introduced through the herbaceous food, the grains, the hay and the straw, which, when taken into the mouth, and finding a solution of continuity of the mucous membrane have thus met all the required facilities for infection. The lesions of the lungs may be explained by the inhalation and introduction of infected dust into the air passages, and the same may be said when the udder is the part affected, and the introduction of the parasite may have occurred through the milk channel. The invasion through the serous membranes and the abdominal organs may also be explained as occurring through the buccal cavity. For the renal form of the lesion he proposes no explanation.

The interesting points, as far as the Peoria case is concerned, follow, and we give them in a translation of Professor Nocard's own words:

> The considerations above presented are, however, sufficient to show th predominating action of vegetable alimentation in the development of actinomycosis. But thus produced, is the disease contagious? Can it be communicate

y an affected animal to his neighbors? Does he constitute a danger for those who have the care of him? Can a man contract actinomycosis from diseased nimals, as he does in cases of glanders, or rabies, as he receives it in phthous fever, trichinosis, or even tuberculosis? Evidently, the question is not et solved; but it can be said that if actinomycosis is contagious, it is so only in degree so slight that the danger of contagion may be considered as a *negligeble* factor. It is in the country where the disease is the rarest that such a question can be most usefully studied. In France, for instance, each veterinarian ees now and then a few cases of actinomycosis of the jaw. These cases remain lways isolated, though the animals live and associate with others for years.

*Actinomycosis of the jaw has no effect upon the general habit of the subject; s long as the slow progress of the disease has not involved the dental alveola, or oosened the teeth from their sockets, and the animals live, eat, work, fatten nd give milk as much and as well as their neighbors. But whatever may be the uration of the sojourn in the same barns, no matter how intimate the contacts with all animals may have been, never has the disease been seen affecting other animals; and yet from time to time the actinomycotic tumor has been seen to soften nd ulcerate, and through existing and persistent fistulous tracts permit the escape f pus loaded with parasites. Yet, still, I repeat no case of direct contagion has et become known.**

Besides it is known with what difficulty experimental actinomycosis can e obtained; whatever may have been the mode of inoculation, or the quantity f inoculating matter employed, or whether obtained from pure cultures or from resh lesions, the result is always negative. Some authors have succeeded in iving rise to the development of tumors in animals which had received into the eritoneum fragments more or less voluminous of actinomycomes; but the inoculation by series has always failed, and, as the result, one is brought to the onclusion that to reproduce itself *de novo* in an animal organism the germ must erhaps pass through a different media. We know nothing of the evolutive period of the disease, but it is an allowable supposition that the vegetates, through which the introduction into the organism occurs, not only act as a vehicle of ntroduction, but that they probably furnish a necessary or perhaps simply useful substitute for an unknown phase of its evolution.

Should this hypothesis be admitted, the comparative history of this affection will be better understood; it is easily explained how, out of seventy-five observations of human actinomycosis counted by Moosbrugger, he could discover but single patient who had been in contact with animals affected with tumors of he jaw, while in forty-nine cases they were found in persons whose vocations did ot require their proximity to affected cattle.

The conclusion which imposes itself is that the source of infection is the ame for both men and animals, and that in all appearances gramineous substances have served as vehicles for the introduction of the parasite.

In many of the cases of human actinomycosis where the cause has been raced it was in persons having thoughtlessly chewed or swallowed particles of traws or ears, or grains of wheat or rye. In the elucidation of the saprophitic life of the germ lies the only means of establishing on a solid basis the rules of an efficacious prophylaxy of actinomycosis, whether in man or in animals.

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* The italics are ours.—Ed.

MALLEINE IN THE DIAGNOSIS OF LATENT GLANDERS.—How often have veterinarians been embarrassed in the presence of an animal possessing a symptomatic resemblance to glanders, and yet with such a want of positiveness in its manifestations that the question "whether it is truly glanders" had almost to remain unsolved.

And yet how many means are at his disposal of which he may avail himself, as aids in the solution of the question, among which are the various inoculations of other animals, from the small guinea-pig to the dog, the horse or the donkey. But to make such a system of inoculation available, something to inoculate becomes necessary, such as the various discharges, pus, glandular tissue, etc.; and how often are they absent? There are cases where the disease is localized in the lungs, and there is nothing externally visible, and in these cases what is to be done?

By the discovery of tuberculine, one fact was established, which, if applicable to the virus of other contagious diseases, would prove of great value.

This principle was that the products of secretion of the tuberculous bacilli, when cultivated *in vitro*, have a *specific* and altogether special *elective* action, upon the organic lesions caused by this bacillus.

If this action existed, was it peculiar to the tuberculous bacilli, or did it not exist as well for the pathogenous microbes of other diseases? It is an importont question, and it seemed to be answered in respect to glanders in the affirmative.

Two Hessian veterinarians, Kolinng and Hellmann, were the first to announce the result of their labors in the obtaining from the extracts of cultures of glanders the malleine, which they claimed was capable of an action upon the lesions of glanders similar to that of tuberculine upon the lesions of tuberculosis.

Malleine is the glycerinated extract of the cultures of the bacillus of glanders, and according to the veterinarians referred to, a subcutaneous injection was followed in several glanderous animals, by strong febrile reaction, while healthy horses used as *witnesses* or tests, showed no elevation of temperature. As we have before reported, Dr. Kolinng died from the inoculation of glanders, while engaged in his experiments.

These experiments have been quite extensively repeated since. Professor Nocard recently read before the *Societé Centrale*, a communication relating to his experience with the new agent, which ends with a statement of the results obtained by him, as follows:

1. The subcutaneous injection of malleine in the dose of a cubic centimeter, gives rise, *in glanderous horses*, to a strong febrile reaction, appearing as early as the eighth hour after the operation, and lasting for several hours following.

2. If the elevation of temperature exceeds two degrees, it can be affirmed that *the animal has glanders*—if the temperature does not vary, or rises less than one degree, *the animal has no glanders*. If the temperature rises between one and two degrees, it is not yet possible, in the present condition of our knowledge, to be positive as to whether the animal has or has not glanders; he must be considered as doubtful, and treated accordingly.

3. In all infected stables, it would be advantageous to submit all the contaminated animals to the malleine test. A better surveillance, a better regulated abatage, and more judicious sequestration would follow, and in any case no new victims of the disease would be found.

The period must certainly soon arrive when all practitioners, and especially all State veterinarians, will consider malleine one of the most important factors in their diagnosis, prognosis and sanitary remedies, in cases of latent and of doubtful glanders.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.—We have received, as we go to press, the notice of the semi-annual meeting of this Society, sent to us by the kindness of the Secretary, Dr. N. P. Hinkley, V.S. The doctor sends us, besides the notice, an urgent appeal addressed to veterinarians in the State, asking them to lay aside all personal and professional business for one day to attend the meeting on the 14th of July. It is to be hoped that the call will not be ignored, and that the roll call will show every section of the State represented at the meeting in Syracuse. New York State ought not to remain without a veterinary society doing work in behalf of the profession, and the present Society promises well if it only receives the support of the veterinarians of the State. The notice reads as follows:

NOTICE.—The semi-annual meeting of the New York State Veterinary Medical Society will be held at the Vanderbilt House, Syracuse, on Thursday, July 14th, 1892, 10 o'clock A.M. Every qualified veterinarian in New York State ought to attend the meetings of this Society and offer his assistance in accomplishing the good work it has undertaken for the benefit of the profession throughout the whole State. We extend a cordial invitation to every one of you to join us in this attempt to elevate the standard of our profession. Several papers of interest will be read and offered for discussion.

N. P. HINKLEY, D.V.S., *Sec'y.*

ORIGINAL ARTICLES.

ACTINOMYCOTIC GLOSSITIS.

TREATMENT BY THE ADMINISTRATION OF POTASS. IODIDUM.

By MR. GODBILLE.*

First observation. September, 23d I was called to visit a four-year-old cow, and at once recognized her trouble. The tongue was one third larger than normal, hard, and with its superior and lateral faces covered with yellowish nodules. She salivated profusely; the intermaxillary space was much swollen and œdematous, and prehension of food was difficult, as well as mastication; temperature normal. According to the owner, the disease had existed for the past ten days.

The animal was left in the pasture, and the daily administration of 12 grammes (about two drachms and a half) iodide potassa in two doses, in about a pint of water, was prescribed.

Ten days later the symptoms were much improved; sali-

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*Extracts from Professor Nocard's paper before the *Soc. Cent. de Med. Vet.*

tion much reduced, swelling of the maxillary space almost sappeared ; the tongue had again assumed its normal size d mobility ; the yellowish nodules had disappeared, and in eir place were reddish granular spots, true cicatrices, not t covered with epithelium. The patient ate well, her flanks ere full and lactation normal.

A peculiar feature was that the entire skin became covered ith large, thin epidermic pellicles, of an orange yellow color, incipally on each side of the neck. The eyes became ollen, the lacrymation quite active, and there were coryza d diarrhœa. As soon as these evidences of iodism were anifested, the organism being saturated with potass. iodide, d the animal on the way to recovery, the treatment was opped. The recovery was radical, a week after.

Second observation. October 8, 1891, a cow nine years old owed an actinomycotic tongue, of eight days' standing. e was kept in the barn, and received every day in two ses, ten grammes of potass. iodid. Diet : grass and mashes bran and rye flour.

Ten days later improvement was well marked ; but signs iodism were less pronounced than in the first case, as the es were less swollen and lachrymation less. But the idermic exfoliation was very marked.

Considering the animal cured, she was returned to the sture, and all treatment suspended, but four days later the ehension of food again became difficult and maxillary space ecame puffy and she was brought back to the barn and re- ived six grammes of the iodide morning and evening ; the dism then reappeared and more severely than at first, and en everything proceeded favorably. Her recovery was al.

Third observation. A steer four years old had for a few ays back refused his food and had salivated abundantly. On amination of the mouth, the tongue seemed absolutely rmal, but the palate was tumefied and covered with yel- wish nodules like those of an actinomycotic tongue. In the me field six weeks before, a steer had been kept, which was estroyed on account of actinomycosis of the tongue.

This patient received potass. iodid. in decreasing doses, fifteen grammes the first day, thirteen the second, then eleven, nine, seven and five grammes, a dose which he received until the twelfth day, when he appeared entirely recovered, although the phenomena of iodism were not well marked.

Fourth observation. A heifer of eighteen months was affected. She was placed under the same treatment, with gradually increasing doses, beginning with five grammes the first day, and increasing one daily until twelve. The symptoms of iodism became well marked on the sixth day, with on the eighth, coryza, an abundant flow of tears, and epidermic desquammation. The treatment was then discontinued. A few days later recovery was complete.

The following case is recorded by Prof. Nocard himself. A cow six years old, losing flesh rapidly, was sent to the butcher for slaughter. She was in bad condition, hollowed at the flank, and with the maxillary space filled with a hard, painless mass of the size of a man's arm, not adherent to the skin. A thick viscous saliva escaped from the commissure of the lips, and exploration of the mouth seemed painful. The tongue was very large, principally at the base, hard and nodulated, and but slightly flexible; the lateral faces covered with small tuberculiform nodosities, the mucous membrane ulcerated in spots, pressure upon which forced out little yellowish masses, which when crushed showed under the microscope the tuffs of actinomycotic growth. The temperature was normal; pulse, 46°; respiration, 12. After a few days the animal was placed under treatment as follows:

March 15th she received six grammes of potass. iodidum in a pint of water in one dose, and this was followed by eight grammes in two doses, one in the morning and one in the evening before meals. Three days later there seemed to be some improvement; on the 19th signs of iodism were well marked, and the symptoms had subsided in severity. On the 21st, everything was better accentuated, the improvement being more manifest, as the iodism was better marked.

On the 24th everything had assumed its normal aspect and the treatment was discontinued, and since then the animal has regained her general fat condition.

UBERCULOSIS OF ANIMALS IN ITS RELATION TO HUMAN ALIMENTARY HYGIENE.

By Prof. S. Arloing.

(*Continued from page* 138).

II.

We believe we have answered all the principal objections vhich have been urged against the conclusions adopted by he various congresses in which the question of tuberculosis ias been discussed. A few words more, however, may be f use.

It would have been surprising if from one congress to anther there had been no progress accomplished in the ideas licited and illustrated by means of these discussions. In 888 it had been decided "*that it was necessary to enforce by ll means possible, including the indemnification of interested paries, the general application of the seizure, and total destruction of ll the meats of tuberculous animals, whatever might be the severty of the lesions found in those animals.*"

The ministerial decree issued during the time when your liscussion was in progress did not include features of total eizure, or of indemnification. It remained satisfied with the xclusion of the meat from tuberculous animals. *First, if the esions were generalized, viz., not exclusively confined to visceral rgans and their lymphatic glands; and secondly, if the lesions, hough localized, had involved the greater part of a viscera, or vere manifested by an eruption upon the walls of the thoracic or he abdominal cavity.*

These restrictions had afforded evidence of important rogress in the service of meat inspection, the superior auhority having thus indicated to the municipal magistrates he duty they had to fulfil, and to the veterinary inspectors he limits within which they might interfere. Some of our olleagues consider that these restrictions are sufficient to mply satisfy all needed requirements, and remove all the langers against which they are directed. But we respectfully beg leave to dissent from the optimistic views of our friends.

We are not satisfied with the decree of 1888, either in regard to the scientific or to the practical aspects which are presented to our view.

Indeed, in allowing free circulation to tuberculous animals, for the reason that the alterations have not gone beyond the affected organ, it implies that the virulent bacilli in these animals are never found in the vascular network of the muscles and glands, which in numerous cases would be an extravagant and erroneous assumption.*

And again, in allowing inspectors such a latitude of judgment in respect to the importance and the extent of tuberculous lesions, there remains an open door for very dangerous differences of appreciation and irregularities and errors of conduct. We have seen this exemplified in Lyons, when the veterinary inspector endeavored to conform to the provisions of the official regulations. Dairies are numerous in that region, and cattle dealers protested against the severity exercised in that city, making unfavorable comparisons between that and the lenity and consideration practised in other places.

To be simpler and more logical, we would then propose to the congress to persevere in the principle of the entire seizure and destruction in all cases, without distinction, of the condemned cattle. But we must not forget that the opposition to any measures designed to suppress the consumption of tuberculous meats is with an important class of interested persons largely and exclusively a question of money, and we have also shown that these measures affect one class of agriculturists more intimately than agriculture itself, pure and simple. If we could so alter things that this fact could be ignored, then all minds might be brought into a general harmonious co-operation in the matter. In other words, instead of leaving those who are entirely dispossessed by the seizure of the diseased products to sustain the entire loss, the result-ng damages ought to be equitably divided and apportioned among all who are in any degree benefitted by their interest n the trade of the cattle-market. In order to accomplish this, we propose the institution of a system of mutual warranty and assurance, which, when properly organized and operated, could not fail to be followed by excellent results. The objection to such a proposition was that it would involve the investment of a large capital.

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* In a Hygienic Congress held in London not long since, Messrs. McFadyean and Woodhead reported a case in which the intra-muscular and tuberculous deposits existed with some nodules in the lungs only, and a few lymphatic glands.

To resume, I have the honor of asking this congress to persist in its previous declarations, excepting perhaps the clause relating to the destruction of the confiscated meats. And, moreover, in the interest of the public health, I would urge the establishment of an authorized meat inspection for the entire territory, and with the least possible delay. And *secondly*, I would ordain that the meat of tuberculous animals n its fresh state should in every case, without distinction, be strictly excluded from the markets, or from entering into general consumption as human food. *Thirdly*, it should be sterilized, or transformed by the application of sufficient heat, or by salting, according to location and other circumstances, before being offered for consumption. *Fourthly*, the cost involved in these transformations or modifications should be compensated by an indemnity. And *fifthly*, and finally, this indemnity should be paid from a special fund derived from a tax assessed upon every head of cattle inspected.

ENORMOUS DIMENSIONS OF THE STOMACH OF A HORSE —In making the post-mortem of a horse fourteen years old, veternarian Koch, inspector of markets at Hagen, found the stomach of his subject to answer to the following dimensions: Filled with no less than 51½ kilograms of food, with the shape of an enormous egg, longitudinal circumference measuring 1 meter and 90 centimeters, while transversely its circumference was 1 meter and 46 centimeters, at the same time it contained 84 litres of water. The mucous membrane of the left sac occupied a space four times larger than that of the right.

LICE AFFECTING DOMESTIC ANIMALS.*

By Herbert Osborn.

The following pages on some parasites that affect our domestic animals are extracted with but slight alteration from the writer's paper† published by the Division of Entomology U. S. Dept. of Agriculture, and we desire here to acknowledge the kindness of the Department officers in allowing the use of the cuts which accompany it.

It is needless to speak of the importance of the subject or to present any apology for devoting space to its consideration. The keeping of live stock for work, dairy, and meat or wool production is one of the most important industries in the state and the injuries of parasitic insects often assume important proportions. While only a few species are treated in the present paper they are such as require frequent attention.

The common lice of our domestic animals belong to two quite distinct groups of insects, and may be called for convenience the suctorial lice (which form the family *Pediculidae*) and the biting or running lice, which do not penetrate the skin to suck blood, but feed upon the epidermal scales, hairs, feathers, etc. (which are included in the family *Mallophagidae*)

The Suctorial Lice.

In these there is a tubular mouth capable of being thrust into the skin to draw blood. The feet are adapted to clasping hairs and the insects are poorly adapted for locomotion except in the hairy covering of animals.

The eggs, "nits," are attached to hairs by a glue-like substance, and the young lice when hatched resemble the adults except in size. As the entire life of the parasite is passed upon the same animal or another animal of the same kind, its range of habit is easily stated.

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*From Bulletin of Experimental Station of Iowa.

†I. The Pediculi and Mallophaga affecting Man and the Lower Animals, by Prof. Herbert Osborn. Bulletin 7, Division of Entomology, U. S. Department of Agriculture, 1891.

But very few of the species are ever ound upon any other species of animal han that which they normally infest, nd if so always upon very nearly reated species. Whether this is due to ifferences in the skin, of temperature, f the size of the hair to which they nust adhere and to which their feet re adapted, or to some subtle difference in the odor or taste peculiar to heir particular host which leads them o discard all others, we are unable to ay.

The mouth parts are necessarily capable of great extension in order to reach the blood of their hosts. Uhler says (Standard Nat. Hist., II, p. 209): "A fleshy unjointed rostrum, capable of great extension by being rolled inside out, this action serving to bring forward a chaplet of barbs which imbed themselves in the skin to give a firm hold for the penetrating bristles, arranged as chitinous strips in a long, slender, flexible tube, terminated by four very minute lobes which probe to the capillary vessels of a sweat pore (see Fig. 1). The blood being once reached a current is maintained by the pulsations of the pumping ventricle and the peristaltic movements of the stomach."

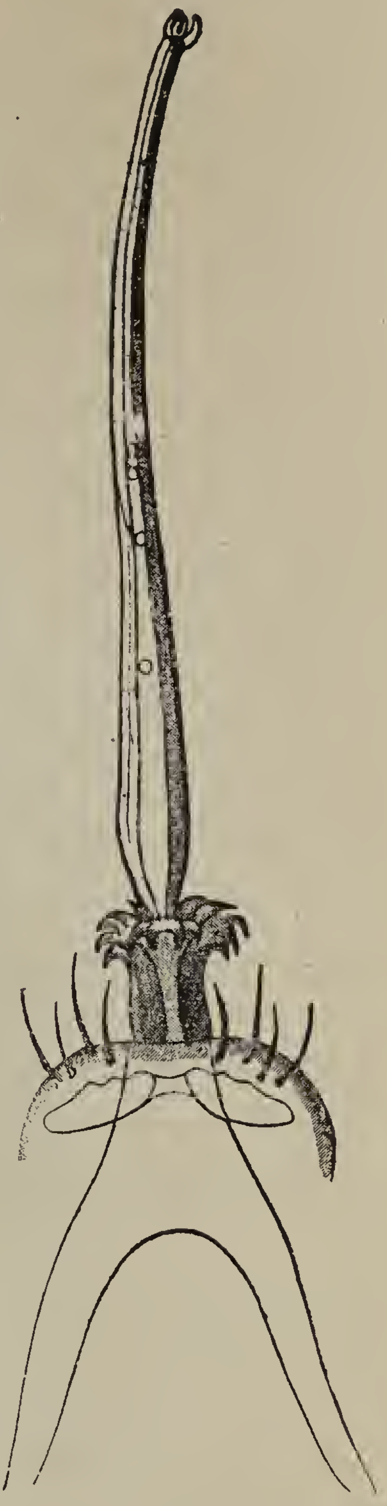

FIG. 1.—Mouth parts of *Pebiculus vestimenti*, showing rostrum and extensile tube—greatly enlarged.

THE SUCKING DOG-LOUSE. (Plate I, Fig. 2.)

Hæmatopinus piliferus, Burmeister.

Although the dog has been the closest companion of man among the domestic animals from very early times, and consequently this parasite in all probability was well known to keepers of dogs, it was not technically described until about the year 1838.

It does not appear to have been a very numerous or injurious parasite, apparently much less so than the *Trichodectes latus* infesting the same animal, and less annoying than either ticks or fleas. Denny says (Monog. Anop. Brit., p. 29), "I have found it upon dogs two or three times, but it is by no means of common occurrence." We have examined many dogs in quest of it, but only a single specimen has so far been our reward. Denny says (loc. cit.), "I also received specimens from the ferret." It can hardly be inferred, however, that this animal is a normal host for the species, as such an instance might occur entirely from accident, the louse having been transferred from some dog to a ferret associated with it.

This species is somewhat smaller than the lice infesting most of the larger mammals, the full-grown individuals being nearly one-tenth of an inch long. It is described generally as of a light-red or ashy flesh color, but evidently varies as the other species, according to condition of the body as well as age of specimens. In preserved specimens these colors become lighter, assuming a yellowish hue, the abdomen, except where darkened by the intestine and its contents, appearing a shade lighter than the front part of the body. The abdomen is thickly covered with fine hairs and minute warty eminences, these latter when magnified about 300 diameters appearing like the scales of a lizard or fish.

Specimens from different breeds of dogs do not appear to have been noticed as different, though a form described as *H. bicolor* by Lucas may perhaps be found to present race characteristics.

THE SHORT-NOSED OX-LOUSE. (Plate I, Fig. 1.)

Hæmatopinus eurysternus, Nitzsch.

This is the species that has probably been familiar from early time as the louse infesting cattle, though since this species and the following one have been generally confused, it is impossible to say which has been most common. It was first accurately described by Nitzsch under the name of

Pediculus eurysternus, in 1818 (Germar's Mag., vol. III, p. 305), nd has received mention in every important treatise on arasites since that date, as well as innumerable notices under he head of animal parasites, cattle lice, etc. As with other pecies, the disease produced has been termed phthiriasis, and s treated by Kollar and other writers it has been recognized s a most serious pest and numerous remedies tried for its uppression.

Since it has been very generally confused wlth the following species we shall give more particular description and show s clearly as possible how to distinguish them. The following uotation from Mr. C. W. Tenney (in *Iowa Homestead* for ugust 18, 1882) will show that this difference is not without nterest or value as viewed by a practical breeder: "Then here is a blue slate-colored louse and a larger one of the same olor that vary somewhat in their habits, and the last mentioned is the hardest to dislodge." Evidently it is the species nder discussion to which Mr. Tenney refers as the "larger ne." It infests particularly the neck and shoulders, and these arts are frequently worn bare by the efforts of the animal o rid itself of the irritation produced by these unwelcome isitors. Still, some cattlemen say that these parasites are of o consequence, and that they never pay any attention to hem.

The full-grown females are about one-eighth to one-fifth of n inch long, and fully half that in width, while the males are little smaller and proportionately a little narrower. Aside rom the difference in size the sexes differ very decidedly in he markings and structural features on the under side of the ody. The males have a broad black stripe running forward rom the end of the body to near the middle of the abdomen, s shown in Fig. 1 *c* (Plate I).

The females have no indication of this stripe, but the black roken band of the upper side of the terminal segment extends ightly around on the under side. The most important character, however, is the presence of two little brush-like organs n the next to the last segment, as shown in Fig. 1 *d* (Plate I).

The head is bluntly rounded in front, nearly as broad as long and with the antennæ situated at the sides midway from the posterior to the anterior borders; behind these are located slight eminences upon which may be found the small eyes, which are seen with considerable difficulty. At the front of the head may be seen the small rostrum or beak, the end of which is usually at or near the surface, but which is capable of extension and retraction. The end of this beak is armed with a double row of recurved hooks (see Fig. 1 *b*). The function of these hooks is doubtless to fasten the beak firmly into the skin of the host, while the true pumping organ must consist, as in the *Pediculi* of a slender piercing tube, though we can see only slight indications of this tube within the head, and we have not seen it nor do we find any record of its having been seen fully extended in this species. Professor Harker says the rostrum can be pushed out, but his figure shows only the basal portion with the crown of hooks and nothing of the tubular parts inclosed within.

The thorax is wider than long and widest at the posterior margin where it joins the abdomen. The legs project from the side, are long and stout, and especially adapted to clasping and clinging to the hair. An extra provision for this purpose consists of a double plate having fine transverse ridges in the basal joint of the tarsus. This structure appears to have been first described by Professor Harker (Agricultural Students' Gazette, vol. I, p. 162). The abdomen differs greatly in form and size, according to the degree of distention, which accounts for the discrepancies in the different figures of this species. It may be called flask-shaped and more or less flattened according to the amount of matter contained in it. There is a row of horny tubercles along each side and a row of chitinous plates along each side of the upper surface of the abdomen. The spiracles are located in the tubercles at the sides, and there is one to each of the last six segments omitting the terminal one. In color there is some variation, as would be surmised from a comparison of descriptions by different authors. The general color of the head and thorax is a light brown approaching to yellowish, with touches of bright chestnut on the head and legs and margins of the thorax, also touches of dark brown on these parts, more particularly on the dorsal portion of the thorax. The abdomen in fresh specimens has a general bluish aspect, not so noticeable in preserved specimens, besides its color depends evidently in large degree upon its contents. Denny says "grayish-white or ochraceous gray," which would apply well to preserved specimens, but this plate shows it a blue-gray. Harker says brownish gray. It appears to us that the term used by Mr. Tenney, blue slate-colored, comes quite as near describing the average appearance as any that we have seen. The tubercles at the side of the abdomen and the chitinous plates are chestnut-colored, while the most of the upper surface of the terminal segment in the female and the ventral stripe in the male are black.

The females deposit their eggs on the hair, attaching them very near the skin. Fig. 1 *e* represents one of the eggs, showing its attachment to the hair and the distance from the root of the hair in the specimen drawn. The adhesive substance evidently invests the egg during oviposition and is attached to the hair, the egg then slightly drawn along so as to leave the glue-like mass to form a firm union around the hair and to the egg. The egg is elongate-shaped, tapering at the lower end, and having a cap-like covering at the upper end. The surface is set with very minute points just visible under an inch objective, but showing clearly with a power of 300 diameters. At the surface no connection is to be seen between different points, but focusing a little below the surface brings into view what appear to be minute threads or channels running from point to point and giving a reticulate appearance to the eggshell. The points cannot correspond to the circular bodies represented in Denny's figure (E, Plate xxv, Monog. Anop. Brit.) which have much more the appearance of protoplasmic granules of the egg contents. The shape of the egg in his figure is also entirely different from that of the specimen from which our figure is drawn.

The young louse escapes from the outer or unattached end, whether by pushing off the cap-like portion or simply pushing through this portion which appears to be thinner than the rest and may be simply membranous, is not, so far as we know, determined. No marked changes, except in size and the development of the chitinous patches, occur from hatching to maturity.

This is one of the most difficult parasites to destroy, and once settled upon an animal should receive prompt and thorough treatment. The main reliance of veterinarians seems to be stavesacre, and this can doubtless be depended upon to accomplish the desired end. Mr. Tenney recommends the seed of common larkspur steeped, and the animal thoroughly washed with the liquid. He says: "I have known one application to destroy every insect and egg; two will suffice if done thoroughly." Of course this and the stavesacre are nearly identical, both plants belonging to the genus *Delphinium.* Washes of carbolic acid soap or of tobacco infusion are also effectual, but washes of any kind are of course illy adapted to use in midwinter, the time when there is frequently most necessity for treatment. Mercurial ointment, sulphur, or tobacco smoke, kerosene and lard, or kerosene emulsion, road dust, ashes, etc., may be resorted to, according to the circumstances. Infested animals should, if possible, be placed apart from the others, and much trouble may be saved by this precaution.

Experiments with fumigation have shown this to be a method available when other plans are undesirable, though from the equipment necessary, and the fact that it requires some time in application, it may not prove of as general service as the washes, especially the kerosene emulsion.

The method may be said in brief to consist of a tight box-stall just large enough to admit the largest animal to be treated, one end having a close-fitting door to admit the animal, the opposite end a stanchion in which the animal is fastened, and covering the open part of this end, and made to fit tightly around the head just in front of the horns, is a canvas sack open at both ends, the inner one nailed to the stall and the outer with a running cord to draw it down to the animal's head, thus leaving the eyes and nose in open air. An opening at the bottom of one side admits fumigating substance, sulphur or tobacco, the latter apparently the most effective. In burning this we used a wire screen to spread the tobacco, placing this over a tin trough containing a small quantity of alcohol. It could be burnt, however, with coals or using a small quantity of kerosene. The time of exposure necessary will vary some with the strength of fumes, but one to two ounces of tobacco and exposure of 20 to 30 minutes was found effective. Pyrethrum might be better even than tobacco.

This species has been said to occur also on horses, but if this is the case it must be in rare instances, and there need be little apprehension of horses becoming infected with it by transmission from cattle with which they may be associated.

THE LONG-NOSED OX-LOUSE. (Plate I, Fig. 3.)

Hœmatopinus vituli, Linn.—*tenuirostris*, Burmeister.

In connection with the preceding species this louse, as already stated, has long been familiar to cattlemen; it has also been known to entomologists for a considerable time, but its history from the entomological side is not entirely clear. It seems to have been first technically described by Linnæus under the name of *Pediculus vituli*, which name has been followed by Fabricius, Berkenhout, Stuart, and Turton, and, with the exception of the change in the generic name, by Stephens, Denny, and English and American authors generally. Nitzsch describes it under the name of *Pediculus oxyrhynchus*, which name was Latinized by Burmeister to *tenuirostris*. This designation has been followed by Giebel and Piaget, but why the earlier name of Linnæus was dropped we fail to discover. It seems more proper to retain the name given by Linnæus.

In this species the body is about one-eighth of an inch long and not more than one-third of that in width (see Flg. 3). The head is long and slender, the antennæ set near the middle each side; there is but a very slight protuberance behind the antennæ and no eyes visible. The head sets well back into the thorax, forming an acute angle behind; the thorax is longer than wide, and has a distinctly showing spiracle above the second pair of legs; the abdomen is elongate, without chitinous plates and devoid of any tubercles along the sides; the terminal segment is also devoid of black horny band; the brush-like organ on the under side of the abdomen (see Fig. 3) is slender, while the terminal segment is set with numerous rather long hairs.

In all of these points it will be observed there is a distinct difference from *eurysternus*. The brush-like organ on under surface of the abdomen, common to females of related species and which is wanting in young of all species, must be taken as distinct evidence of the maturity of the specimens. If, however, there were any doubt on this point, a study of the young of *eurysternus* gives equally conclusive testimony. In the very youngest *eurysternus* we have seen that the chitinous tubercles along the sides of the abdomen inclosing the spiracles are distinctly to be seen, while the head, though longer proportionally than in adults, is by no means equal in length to that of adult *vituli*. A young *vituli* found, it is true, associated with *eurysternus* shows this elongation of the head still more markedly. In color there is little difference in the two forms, this species having rather duller colors upon the head and thorax. The abdomen of young specimens, when full of blood, appears dark red, but the bluish-gray hue is more prominent in adults. The eggs of this species have not been described, and we have not had the good fortune to discover them. The young are even more slender than the adults.

The remedies that are available for the preceding species will prove effectual for this, and it is evidently less difficult to subjugate than that form.

THE HOG-LOUSE. (Plate I, Fig. 5.)

Hœmatopinus urius, Nitzsch.

Occasionally this species appears in formidable numbers, since we often hear of swine badly affected with lice, and no other species is known to attack this animal.

Giebel credits this species to Moufet, citing the Theatrum Insector, (1634, 266), while Piaget states that it is cited by

Moufet on the authority of Albertus (IV., C. 205), which would carry its recognition back to the thirteenth century Linnæus described it under the name of *Pediculus suis*, which name has been most commonly followed, but Nitzsch revived the name of *urius*, and this name has been followed by Giebel and Piaget. Along with other parasites it received frequent mention by both early and modern writers. Denny speaks of it as rare in England, but common in Ireland. He says (Monog. Anop. Brit., p. 35):

"This species is found in great numbers on swine, but it does not appear so generally spread as might be expected from the dirty habits of the animals. It most frequently occurs on those fresh imported from the sister isle. It was many months before I could obtain a single example. I had applied to both farmers and pig butchers, neither of whom seemed to approve of the idea which I had conceived, that of *their* pigs being *lousy*, but referred me to those of the Emerald Isle as being sure to gratify my wishes (forgetting, I suspect, that the Irish pigs come to this market to meet English buyers). I accordingly visited a colony just arrived, where I most certainly met with a ready supply; but here they were confined almost entirely to lean animals, and wherever I found a pig fat and healthy no game were to be seen."

Most stockbreeders have probably seen instances of its abundance, and from the frequent mention of it in the agricultural papers, it would seem to be quite common throughout the country, and while. perhaps, less generally distributed than the ox-louse, to multiply sometimes so as to cause much more apparent damage to its host. The fact that they are more commonly found on poor or runty animals should not be taken as evidence that they have a preference for such animals, but rather that the animals upon which they have multiplied rapidly have, in consequence, become emaciated and unhealthy. That they do not increase more rapidly and become a much greater nuisance, may be in part because the majority of hogs are sold and slaughtered at a comparatively early age, and with each one slaughtered must perish the parasites which have been supported by it, unless, perchance, an occasional one escape the scalding trough and succeed in finding another host. Of the vast number of hogs shipped to market and slaughtered at the great packing houses, none can bequeath the insects they have nurtured to their followers. The amount of injury and the consequent need of precautionary measures are, therefore, much less for this species than for many others.

This is one of the largest species of the family, full grown individuals measuring a fourth of an inch or more in length. It is of a gray color, with the margins of the head and thorax and most of the abdomen dark; the head is quite long, the sides nearly parallel, with strong eminences just back of the antennæ, which are set on the sides of the head, midway from rostrum to occiput; the legs are lighter, with dark bands at the joints; the spiracles are inclosed by a black chitinous eminence, and there is a broad black band on the last segment, broken near the middle. (See Fig. 6.)

The male has the abdomen marked beneath with a large black area extending forward from the end of the terminal segment, so as to occupy the central portion of the last three segments.

There is a curious provision in the feet for strengthening the hold upon the hair, which does not seem to have been hitherto described.

It consists of a circular pad-like organ or disc in the outer portion of the tibia which is received in a conical cavity in the end of the tibia, and which can be forced out so as to press upon the hair held between the claws of the tarsus and the end of the tibia.

Ordinarily, and always in the dead specimens, this is withdrawn so as to appear simply as a part of the end of the tibia, and the spines located on its margin appear to belong to the tibial rim, but if examined with sufficient magnification when the louse is alive it is easy to observe the extrusion of the organ.

Whether similar organs exist in related species is yet undetermined, but it seems quite probable that they should, since in the specimens examined microscopically we have usually to deal with dead and preserved individuals in which this structure would almost certainly escape notice.

The eggs are one millimeter and a half in length (.06 in.) by three-fourths of a millimeter in width (.03 in.). They are light yellow or dusky whitish in color, and taper slightly to the point of attachment. The circular lid-like portion is large, occupying nearly all the surface of the free end of the egg. They are attached usually near the base of the hairs.

On account of the thinness of the hair, the application of remedies, where necessary, is quite easy. Washes of tobacco water or dilute carbolic acid, and the application of kerosene in lard, or kerosene emulsion by means of force pump, sulphur ointment, etc., are recommended. The application of fine dust may be provided for naturally by allowing the hogs a chance to roll in the roadway or any place well supplied with fine dust. Where this is impracticable, the dust, ashes, or powdered charcoal may be applied directly to the neck and back of the infested animal. The species is not known to attack any other of the domestic animals, and hence no precautionary measures in this direction are necessary.

THE SUCKING HORSE LOUSE. (Plate I., Fig. 4.)

Hæmatopinus asini, Linn.—*macrocephalus*, Burm.

This species was figured by Redi (Exp., Pl. xxii., Fig. 1) and was described by Linnæus under the name of *Pediculus asini*, presumably his specimens being taken from the ass. Later Burmeister described specimens from the horse under the name of *Pediculus macrocephalus*. Denny retains the name given by Linnæus and states that it is common upon the ass, and that he also had specimens from the horse, from which circumstance he suspected Burmeister's *macrocephalus* to be the same. Giebel and Piaget both follow the name of Burmeister, and Piaget separates as a variety the form occurring on the ass, and gives it the name of *colorata*.

It seems hardly probable that it occurs in this country in sufficient numbers to cause much trouble on horses. Possibly examination of mules, asses, or donkeys would show greater abundance from the fact that horses in general are more carefully groomed than their somewhat despised relatives. Th size is about the same as that of the ox-louse, but it differ very decidedly in the form of the head, which is long, slender and the sides of the head nearly parallel, as shown in the figure (Fig. 9), taken from Comstock's "Introduction to Entomology."

Careful grooming may be looked upon as at least favorable to the reduction of numbers in this species. In case the become too numerous the application of a little kerosene t the card or curry comb used in grooming the animals will b found of value. When more vigorous treatment is necessar the measures recommended for the ox-louse may be adopted

THE BITING AND RUNNING LICE.

Mallophaga.

This group embraces all the biting lice infesting birds an mammals. They are very distinct, indeed, from the preceding group, though frequently placed with them unde such unnatural divisions as *Anoplura*, *Pediculines*, etc.

These bodies are usually hard and horny and much flattened. They possess mandibulate mouth parts adapted t cutting and biting the hairs, feathers, epidermal scales, o excretions on the bodies of their hosts. The jaws are situate on most forms underneath the head and near the center, th clypeus projecting and forming the most anterior portion o the head. The eyes when visible are located back of th antennæ. The antennæ are five-jointed except in *Trichodectes*. The thorax is generally narrow, and frequently but tw divisions are apparent. The legs are adapted to claspin (*Philopteridæ*) or to running (*Liothediæ*), the tarsi in the firs case being short and fitted for clasping against the tibiæ, an in the second case being long and provided with two claw well adapted to running. The members of the first divisio occur on both mammals and birds, those of the second, except *Gyropus*, are limited to birds. Wings are entirely wanting and the abdomen contains nine or ten segments and i usually oval in shape.

In life history this group agrees with the preceding. Th eggs are glued to the hairs or feathers of the host animal and open with a circular cap or lid at the free end. The larvæ are less flattened, shorter in proportion, and without the hardened parts common to the adults covering a part of the surface. The length of life and rapidity of multiplication has not been determined for any species so far as we know, and the habits of the insects make any such determination a matter of great difficulty.

The effect of these upon the host animal may be less important than that of the suctorial lice, but judging from cases where serious results follow the efforts of the animals to rid themselves, and from the known irritation due to the crawling of anything among hairs and feathers, it cannot be doubted that they cause much inconvenience to the creatures which become their involuntary supporters.

BITING LICE OF HORSES, MULES, ASSES, ETC.

Trichodectes equi, of Authors.

The original reference by Linnæus to the lice of horses and asses under the name of *Pediculus equi* most certainly refers to the common *Trichodectes* infesting these animals, but Piaget has reached the conclusion that this reference is to the form subsequently described by Giebel as *Trichodectes pilosus*, and that the form described by Denny as *equi*, and which has since almost universally been treated as the Linnæan species, was in reality a different insect from that described by Linnæus under the same name. He therefore describes this form under the name of *parumpliosus*. It is certainly somewhat confusing to be obliged to drop the familiar designation for so common a species, and were it not that the conclusion has been reached by one who is probably the highest living authority regarding these insects we should hesitate to introduce the change. The figures given by Piaget, however, leave no doubt that there is a decided difference between *pilosus* and *parumpilosus*, and it is equally certain that our common species belongs to the latter form; so, if there is no question as to Linnæus having the form *pilosus* in hand, we certainly have no right on technical grounds to apply the term *equi* to our common form. We will therefore introduce descriptions and comparisons of the two forms, and adopt, for the present at least, and on the authority of Piaget, the names given in his "Les Pediculines."

Trichodectes pilosus, Giebel. (Plate II., Fig. 7.)

This, according to Piaget, is the form originally designated by Linnæus as *equi*, and which, if that is correct, was the basis for a name which has been widely used to designate the biting lice of the members of the horse family. The original reference dates back considerably more than a century, and doubtless, the insect was familiar many centuries before that as the horse and ass have been too familiar as domestic animals to allow the parasite common to them escaping entirely the notice of man.

According to Piaget this occurs upon both the ass and the horse, while the following species he has found only on the horse.

We have not been fortunate enough to secure samples o this form, though we have the other in great abundance, so we are compelled in describing to depend upon the excellen description and figures of Piaget, the latter being reproduced (in Fig. 7) for comparison. The head in this form is shorter and less rounded in front, that of the male being still less rounded than the female, while the abdomen is more slender and tapering. The transverse bands are also represented as less conspicuous. Perhaps the most striking point, however is the position of the antennæ, which stand well forward on the head, so that the front border of the head and base of the antennæ are nearly in line.

The habits of the species and the remedies applicable to it are naturally identical with those of the other related species.

Trichodectes parumpilosus, Piaget. (Plate II., Fig. 6).

While it does not seem possible that all the writers previous to Denny should have overlooked this form, which appears to be the more common one, at least on the horse, i ay be true that Denny was the first one to give it a thorugh description and careful drawing. He speaks of it as ommon on the horse and ass, but Piaget says he has never und it on the ass, and there is, of course, a possibility that enny did not distinguish between this and the preceding ecies.

In this species the head is decidedly rounded in front, the ntennæ inserted well back, so that the head forms a full mi-circle in front of the base of the antennæ. The abdomen more slender and tapering than in *scalaris*, but less so than *pilosus*, as shown in Piaget's figures. The color is much e same as in the allied species, the head, thorax, and legs eing a bright reddish brown or chestnut, and the abdomen f a dusky yellowish color, with about eight transverse dusky ands occupying the central or anterior portions of the segents and extending from the middle line a little more than alf way to the margin. They are hardly as conspicuous as *scalaris* and apparently rather longer and more conspicuous an in *pilosus*.

The habits of this species are well known and have reeived mention for many years. They seem to accumulate ore particularly upon colts or horses in pasture, but their resence becomes most manifest in the latter part of winter, hen they may become so numerous as to cause great irritaon to the animals infested. They occupy more particularly e region of the neck, and also accumulate around the base f the tail and between the legs, and the animals will freuently rub bare places in these regions in their attempt to id themselves from the irritation.

It is unnecessary to give any special notice regarding reatment, as they must be attacked on the same plan as other pecies.

Even if it proves that this species does not ordinarily nfest the mule or donkey it would be policy not to allow hese animals, if infested, to associate with horses, as we have o assurance as yet that they can not thrive on any of the embers of the equine family.

(*To be continued.*)

TUBERCULOSIS.

By Dr. C. J. Sihler, Kansas City, Kas.*

This is a specific infectious disease, produced by tubercles, which are in turn special products of a distinct micro-organism, known as the *Bacillus tuberculosis.* The actual or continued presence of tubercles is, however, not a necessary factor in the production, course or development of tuberculosis. Preëxisting tubercles may have been discharged, or after softening become calcified or absorbed. In acute tuberculosis, it is not uncommon to find the spleen enlarged but free from tuberculous deposit.

The history of tuberculosis falls into five periods, three of which at least are quite distinct, in that they date from the discoveries of distinct individuals, Bayle and Lænnec, Villemin and Koch.

The first is the period of ancient history. During all this period the disease was observed from a clinical stand point only.

The second period, beginning with the birth of anatomy, in the sixteenth century, furnishes the first definite knowledge regarding changes of lesions of structure.

The third period, following the publications of Bayle and Lænnec, in the first quarter of the nineteenth century, declaring tuberculosis a separate affection, due to the deposit of tubercle, a specific product independent of ordinary inflammation.

The fourth period was introduced late in the last half of the nineteenth century, with the inoculation experiments of Villemin, in 1865; and the fifth was announced with the brilliant revelations of Koch, in 1882.

There is but one form of tuberculosis, and scrofula is only an external form of it. Villemin concludes tuberculosis is a specific disease. It belongs, therefore, among the virulent affections, and takes its places in nosology with small-pox, scarlet fever, syphilis, and more specially with glanders. The isease arises, therefore, either by direct inoculation, by con- gion, or, finally, by germs suspended in the air, or contained i the peculiar tuberculous matter. According to Professor Valley, hereditary tendency may be divided into direct and idirect: the former, when it is transmitted by a sire or dam o its immediate progeny; the latter, when only transmitted o the second or third generation, constituting atavism. No redisposing cause with which we are acquainted exercises ich a potent influence in the production of tubercle as this; om sire to son, from dam to offspring, from generation to eneration, often in unbroken succession, the fatal tendency transmitted; the more consanguinity is multiplied the more ie tendency is increased, and the greater the virulence of the esulting products.

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* From the Report of the Kansas State Board of Agriculture.

No animal whose system is tainted even in the slightest egree, or in whose history there exists the slightest suspicion f tubercle, should be used for breeding purposes.

A remarkable case, proving the transmissibility of the isease from the male parent to the progeny, is published by ippelius: A stock-breeder purchased a bull, and with him erved ten of his cows. The bull was found to be affected ith tuberculosis, and for this reason was killed. All the alves of the ten cows which had been bred to this bull had ventually to be killed, because of this affection. The first ymptoms of the disease in the calves were manifested when ey had passed the adult age.

Williams says it is not only hereditary, but congenital; and e has seen a calf three months old, which had thriven well ntil within two or three days of its death, filled with caseous, alcareous, and gray, tuberculous ulcers. In this calf the hole of the serous membranes were affected, which must ave been formed in the uterus.

Adams relates an instance, from among many others, in hich the lesions of the disease were observed in a calf which ied a few hours after its birth, the mother at the time being ffected with the disease. Semmes relates five cases of phthisis hich he met with in the fœtuses of cattle, and says these ases sufficiently prove that it can be developed during the mbryonic stage.

This insidious and delusive disease is not the result of civilization, as many suppose. Barbarous and uncivilized races are afflicted as severely as many of the most advanced civilized races. Neither geographical position nor climatic condition is a factor in the distribution of tuberculosis; every known part of the globe, with a few isolated areas excluded, is a habitat of the disease. The only constant associated factor is found, in my opinion, in the inbred bovine species. If a community is closely associated with inbred dairy cattle, tuberculosis prevails.

P. L. Simmonds, in his book on "Animal Products," says: "The natives of South Africa delight in horned cattle of the bovine species; the natives are great milk drinkers. These barbarous people suck the blood from the jugular vein of the living bullock," and also "churn together blood and milk for a drink."

In Hirsch's book on the "Geographical Distribution of Phthisis," we find the following: "In Cape Colony phthisis is oftenest met with among the Hottentots inhabiting the plain near the coast."

In proof of the fact that these African cattle are inbred, we have the writings of Anderson, quoted by Darwin, as follows: "The Damaras take great delight in having whole droves of cattle of the same color, and take great pride in their oxen in proportion to the size of their horns. The Namaquas have a perfect mania for a uniform team, and almost all of the people of southern Africa value their cattle next to their women, and take great pride in possessing animals that look high bred."

These facts relating to the cattle-breeding propensities of the negroes account for the statement of Daniell, that "Phthisis is widely prevalent and very malignant among the negroes of the west coast of Africa. In the interior plateaus of southern Africa phthisis, however, hardly ever occurs. This immunity can be accounted for by the presence of the Tsetse fly. This fly inhabits well-defined regions in central Africa, and where it exists cattle, horses and dogs cannot live." Doctor Webster says, although the climate of St. Michael cannot be safely ecommended to a consumptive patient, it is, nevertheless, are to see the disease in a native. Doctor Webster would not ave been astonished at this condition of affairs, had he realzed the truth, that phthisis is a disease acquired from the ovine race; for it is a fact that the only people on the face f the globe who enjoy absolute immunity from phthisis are hose who are not in possession of the domestic cow. Take or instance the Kirghiz, on the steppes of Russia. These eople consume large quantities of mare's milk, and eat the lesh of horses and sheep, but they have no cows. According o Doctor Neftel, a case of phthisis among these people was ever known. The Esquimaux also enjoy immunity, because hey have domesticated the reindeer—not the cow.

Let us look at a locality which once enjoyed immunity, ut is now notoriously a place of consumption. Wallace tells s that Australia was the poorest zoölogical region on the lobe. The only animals that existed on this island before its nvasion by Europeans were a few marsupials. Previous to 780 no ruminants existed there. In 1821, the Government ecoming convinced of the great advantages of Australia as a razing country, immigrants were allowed a grant of from 00 to 2,000 acres of grazing land, and rations from the king's tores were allowed to each settler; a certain number of onvict servants were alike apportioned to them. They were lso allowed a certain number of cattle from the Government erd, and a loan of money to be repaid in seven years. This was the beginning of the cattle raising, and it proved so suc-essful that in 1826 the Australian Agricultural Company com-menced its operations, which was the origin of the sheep and attle mania. A drouth, beginning in 1827 and lasting for hree years, cured the mania. But within a year after the drouth, cattle became so plentiful that meat of the best quality was sold for 1½ cents a pound. In 1833, good cattle could be bought for $4 and $5 a head. At the present time there are 3,000,000 inhabitants, and 8,000,000 cattle. Australia enjoyed a reputation for immunity from consumption, but, as Hirsch says, this has of late been shown to be a mistake. In New Zealand, phthisis has made terrible ravages among the Maoris, and has been one of the chief causes of the gradual extinctio of that race. Both Hirsch and Evans, quoting Grant, say that on the Island of Madagascar consumption is as commo as it is in any part of Europe, and rapidly fatal. The principa diet of the natives is meat, milk and rice.

The natives of Great Kabylia, according to Hirsch an Evans, enjoy an almost absolute immunity from phthisis According to the history of the people, there is no evidenc of the presence of the bovine tribe among them; but the possess large flocks of sheep and goats, and each family ha usually one buffalo ox to do the plowing. As these are peculiar people, with peculiar ideas and peculiar habits, no calculated to encourage visits from European invalids, the retain their immunity from phthisis to the present day. Ther are many countries fnrnishing statistics of death rate fro phthisis where the disease is not indigenous, but due to impor tation. Edmond About, in his book on "Greece an Grecians," tell us that the town of Athens possesses only fiv or six cows; no other milk is drank than that of the sheep their butter alone is eaten. They eat meat but once a year The entire population eat meat at Easter for the whole year and this meat is lamb's. The disease is very rare in tha country. (Roser.)

Prof. James Orton, of Vassar College, who made a scie tific expedition to the equatorial Andes, in 1867, under th auspices of the Smithsonian Institute, says: "At Quito, th highest city in the world, suddenly we are looking down int the valley of Chimbo; there are herds of cattle and fields o grain, yet we shall not find a quart of milk or a loaf of brea for sale. The people insist on first boiling the milk." Profe sor Orton further says consumption is unknown in the city.

Without going into further details respecting separat communities, let us consider the statistics of Europe, an there we find the prevalence of phthisis is regulated by th ratio of the bovine to the human race. Thus, in Irelan where the cattle number 4,570,000 nearly an equal proportio to that of the inhabitants, according to Doctor Wyld phthisis is by far the most fatal affection to which the i habitants of that country are subject.

In China, the people do not drink the milk of the cow, and they are free from phthisis.

Thus the statistics go on, and where the exceptions arise the cause is always evident in the conditions that influence the breeds af cattle.

Taking into consideration all the foregoing facts, there can be little doubt that the inbred species of the bovine race is the prime ætiological factor of phthisis in the human race. They not only nurse the germ, and prevent its extinction, but sow it in the human race continually and abundantly. Without their aid the germ would die, for of all germs known none have so hard a struggle for existence in the human kind as bacillus of tubercle, when we consider the comparatively few of the human race who are afflicted, and the immense number who are exposed to the infection and escape it. The cow is the only known animal that has transmitted tuberculosis to her offspring in inheritance. After looking through all the works at my command, and making inquiries of prominent doctors, I fail to find a well-authenticated case on record of a human fœtus at term showing evidence of tuberculosis. At the congress for the study of tuberculosis, held in Paris, in July of the year 1888, it was stated, and generally accepted by the members, that a large portion of sufferers of phthisis acquired the disease through the ingestion of infected milk or meat. When we come to consider the transmission of the disease through the use of milk and the ingestion of diseased meat, we reach a point of vital importance to every man, woman. and child, and the conviction that the consumption of milk of phthisical cattle constitutes a veritable danger is daily gaining ground.

Since holding my present position, as veterinary inspector for the Bureau of Animal Industry at Armour Packing Company, I find upon post mortem that the udder is more often affected than any other organ of the body, and always in cows with fine, large udders, and those that look high bred.

At this period it seems to be customary to rear children on cows' milk. I therefore think it time that health departments had a regular inspection of all dairies. We have a so-called milk inspection in the large cities, but the adulteration of milk with water and the skimming of cream cannot compare with tuberculosis in milk. As tuberculosis is difficult to diagnose in the early stage, I propose that a sample of milk from each cow be microscopically examined, and then the cow examined by a qualified person. By taking these precautions I think we could, in a measure, improve the health of the people, as well as that of our domestic animals.

REPORTS OF CASES.

OSTEO-POROSIS WITH FRACTURE OF BOTH NAVICULAR BONES, BREAKING DOWN OF PERFORANS AND PERFORATUS AT THE OS-PEDIS, IN POSTERIOR EXTREMITIES.

By C. N. DARKE, D V.S., Guttenberg, N. J.

I was called on April 14th to see a valuable running mare six years old unable to get up; with the history that she had been down five days, and that five weeks previous, while working a trial on the track, she had a very severe fall. She got up and walked to the stable apparently all right. The next day a large cyst formed at the point of the sternum; this the owner punctured and allowed contents to escape; but as it did not do very well, the owner called in a veterinary from New York city, who inserted a seton; but as the mare became very irritable in a few days, owner withdrew seton, the wound healed up all right, mare was again put on the track. On the 9th of April trainer found mare unable to rise; he informed owner, who did not call me till as stated above.

On arriving at stall, found a bay mare six years old unable to rise, eating and drinking, with a small amount of abdominal pain; inquired about fæces and urine; was informed that urine was passed regular, but fæces were very hard and passed with difficulty. On examining head, I found on the lower jaw a little anterior to first molar, and on the external face on each bone, a circumscribed swelling about half the size of a hen's egg, not painful on pressure. The owner informed me that they had been there for about three years, and that a colored boy who exercised her at that time had a habit of yanking the mare while working her on the track to such an extent that he finally discharged him for it. The swelling appeared at that time and seemed to grow to about its present size, and was the same in size now as then to him; also, that it never seemed to cause her any inconvenience; otherwise the head to me seemed normal.

The shoulder and hip joint were very hot and painful on pressure, and when turned over the hair around the two corresponding joints was very wet. The knees and hocks seemed all right. Both anterior fetlock joints were swollen, hot and painful on pressure; both posterior fetlock joints and the hollow of the fetlock were very much swollen, hot and extremely painful on pressure; also the interstices between heels were broken open, and there exuded a serum-like synovial fluid. Temperature, 102° F.; pulse, 48.

I informed owner that I thought mare was broken down, but that I could tell better when I put her in slings. I prescribed the following:

℞ Olei lini.,	℥ vi,
Aloes Barb.,	ʒ vi,
Hydrarg chlor. nitis,	ʒ i,
Pulv. nucis vomicæ,	ʒ i,
Pulv. zinzib. rad.,	qs.

M. et fiat haustus.
Sig.—As directed.

I ordered hot-water enemas with castile soap, and left. Returned about three hours later with slings, The animal was hoisted to her feet. She stood all right and quiet on hind legs, but trembled so violently in forward legs that she had to be lowered, then breaking out in a profuse perspiration. I examined the fetlock joints of both anterior extremities, but beyond being a little swollen I could detect nothing. As the animal stood so well on the hind limbs I did not bother with them, and gave up the idea of break-down. On inquiry of owner when animal was last sick, he informed me that last summer she was laid up for over two months with inflammatory rheumatism. As all the joints seemed hot and painful on pressure (temperature, 102° F.; pulse had gone up to 60), I made a diagnosis of inflammatory rheumatism. This seemed to please the owner very much, as here was a chance to recover. I ordered enemas kept up every once in a while Prescribed

℞ Potassii sodi, ʒ i,
Potassii nitratis, ʒ iv.
M.—Talis dos. No. xviii.
Sig.—One three times a day.

Also belladonnæ linimentum to swollen joints, and then bandaged.

Saw mare next day, 15th, resting quietly, but seemed to have a little abdominal pain, manifested by turning head around to side and giving a slight sigh. Temperature, 102 F.; pulse, 48; bowels not yet open.

Called again on 16th. Seemed about same, but as bowels were not open yet, ordered olei lini, one pint, administered, enemas being still kept up.

Called again on 17th. Purgative had not acted as yet. Ordered olei lini, one pint. Still seemed to have slight abdominal pain Little increase in temperature; pulse about same.

Called again on 18th. Mare eating. Pulse, 46; temperature, 102$^{\circ}\frac{2}{5}$ F. Still had abdominal pain very slight. Fæces passed, but hard and coated with a thick mucus, not foetid, and of a black color.

Called on 19th. Owner said mare had stood up for fifteen minutes that morning, trembled for a few minutes, then it ceased; they cleaned out box and bedded her fresh and she then laid down again. Temperature, 102° F.; pulse about 42, but still had a little abdominal pain; was eating; fæces were passed hard and dry, coated with mucus.

I was sent for in a hurry about six o'clock on evening of 19th. The mare was struggling very violently when I reached the stall. Temperature, 106° F.; pulse, 80. I gave morph. sulph. hyperdomically, and tinct. opii by mouth and rectum, but I could not quiet the animal; she would struggle violently for about ten minutes, then rest about the same; this she kept up until she expired at 11.50 P.M.

Held post-mortem next morning. Heart was of a pink olor, easily torn, with fibrin around the semi-lunar valves of he aorta. The liver was a putrid mass, very soft like jelly; could press my finger right through its substance without esistance, with small nodules studded here and there on its urface. In the vicinity of the liver there was peritonitis; his no doubt was the cause of the abdominal pain, and the iver trouble the cause of the continued constipation. There as no sign of jaundice at any time present. On cutting down pon the exostoses on lower jaw bone they seemed quite hard; could not cut them. Both shoulder joints were ulcerated n patches on its surface. Anterior limbs and tendons seemed o me natural, swelling excepted. Coxo-femoral joints had a ew small ulcers. Fetlock joints were also natural, swelling xcepted. On removing the soles of the hind feet I found a reaking down of perforans and perforatus, fracture of both avicular bones, disease of os pedis, and ulceration of the inerior extremity of the os suffraginis. I then turned both ind feet over to Dr. Liautard, who had them boiled out, and old me I had a nice case of big head on hand.

RESISTING POWER OF THE ANIMAL ECONOMY.

By Claude D. Morris, V. S., Brooklyn, N. Y.

In the early part of May, shortly after my connection with he Bureau of Animal Industry in this city, while attending o my regular duties making post-mortems at the slaughter ouses, a certain cow was placed upon the bed and dressed. pon removing the lungs and heart, the latter was noticed s being extraordinarily large. An examination revealed the onderful resisting power the animal economy is capable of ndergoing when the seat of attack was one of the most vital rgans of the body.

The cow had at some time in the past swallowed a wire ail, three inches in length. The nail had found its way nto the reticulum; there it pierced the anterior wall in the ul-de-sac portion of the stomach, forced its way through he diaphragm, entered the right lung, and when found it was lodged in what was formerly the pericardium, but at the time of the examination had become a thick mass of fibrous tissue. On the right side of the heart a large sinus had formed, extending from before backward, and from base to apex, the walls of which were covered with a thick layer of disintegrated pus; no pus was present in the form as usually seen. There was considerable fetor upon opening the sinus.

The mass surrounding the heart was variable in thickness, some portions being about an inch, other portions nearly three inches in thickness.

The parenchyma of the heart to all appearance was unaffected. The endocardium valves and chordæ tendineæ showed no signs of disease. There were considerable adhesions both of the diaphragm and pericardium. The posterior lobe of the right lung showed signs of previous inflammation, and the path of the intruding agent was easily followed. I do not place the history of this post-mortem before the readers of the REVIEW without feeling to a certain degree that perhaps some will not give it the credulity it deserves. To the casual observer, and I may say examiner this animal outwardly presented no indications of organic disease. She was in good flesh, with a sleek coat of hair.

EXTRACTS FROM FOREIGN PERIODICALS.

ORIGINAL WORK BY RUSSIAN VETERINARIANS.

CONTRIBUTION TO THE STUDY OF SPONTANEOUS RECOVERY FROM GLANDERS.

By M. NONIEWITSCH.

The author reports several cases of the spontaneous recovery of glanderous horses. According to the conclusions of Mr. Meyrick, such a recovery is the result of the weakness of the contagion, which may give rise to local manifestations upon the septum nasi, and in the submaxillary glands without infecting the entire organism. M. Noniewitsch has noticed an interesting case in a mare four years old vhich was used for experiments in the bacteriological instiute of Dorpat. This animal, when but six months old, was noculated under the skin of the right nostril, and that of the capular region, with a virulent liquid obtained by squeezing he liver and spleen of a guinea-pig which had died from glanders.

Nine days after the injection, together with other sympoms, a greasy ulcer appeared on the nasal septum, surrounded by nodules of a grayish-yellow color; also inflammation of the right submaxillary glands, and an abundant discharge from he mouth and ocular regions.

Two months later the patient was very weak, continuing n the recumbent posture. The inoculation of other animals with virulent matter gave positive results. During the entire continuance of the disease the temperature remained at about 39°.

After a while the symptoms began to abate, and a month ater the mucous of the nasal cavity had resumed its normal aspect.

On the 8th of March following, or about six months after, a subcutaneous injection of oleum terebinthina was made, according to Cagny's method. Outside of the œdema following, nothing abnormal could be discovered, and up to the 7th of April the mare was apparently in good health. On that day injections of virulent matter were made as follows, by means of excoriations made with a scalpel upon the right side of the septum nasi; and also, the same process being used, by frictions upon the frontal region; and for the subcutaneous injection of the nostril, virulent matter mixed with a physiological solution of natr. chloro., previously filtrated, was used. For this injection a cubic centimeter was employed. Inflammatory symptoms soon appeared at the points of inoculation, and the microscope disclosed micrococci in the pus, the tumor in the nostril becoming enlarged and warm.

April 11th, all the symptoms were diminished, and by the beginning of May the tumor had disappeared. The maximum of temperature of the mare remained about 38.8.°

On the same day, April 7th, and with the same virulent matter, and at the same places, subcutaneous injections were made on an old horse, and on the 19th of June he died with glanders.

A third injection of the same mare was made with a pure culture of bacillus mallei, of the third generation, obtained from the spleen of a guinea-pig which had died from glanders; the injection being made at the same places and in the same manner. A friction of pure culture, weighing about one grain, on potatoes, was made upon the frontal excoriations, and the quantity of virulent matter, mixed in two cubic centimeters of a sterilized physiological solution of natr. chlor. was used for an injection under the skin of the nose, alongside the nostrils. The pus of the abscess which had formed, examined by the microscope, and the preparation tincted with an alkaline solution of violet methyl of Loffleur, showed several rods of glanders (bacil. mallei.). The condition of the general health varied much, being at times bad, but at others changing for the better. The temperature varied between 40.5° and 39.7°.

On the 25th of September an injection of oleum terebinth was administered, by the Cagny method, but the result was negative, being quite without reaction or morbid changes.

To prove the diagnosis of glanders as transmitted, a third time, to the mare, a dog was inoculated and gave positive results, and was killed, showing at the post-mortem all the organs healthy except the spleen. Pure cultures of bacillus mallei were obtained, with a selected portion of that organ, and besides this experiment two pigs were inoculated, with positive results, by the virulent matter of the abscess of the mare.

On the 24th of October three inoculations were made in a pup and two guinea-pigs, with the discharge from the nostrils of the same mare, but produced no results.

The conclusions of the author are as follows:

1st. In chronic glanders the bacillus mallei of Schutz and Loffleur may be absent, but in their place are found micrococci forming clusters, which under a weak microscopic power may be mistaken for rods. These micrococci present e last stage of bacillus mallei—that is, they are so weakened at they lose their glanderous process upon an impression-le animal, or otherwise die entirely.

2d The glanderous process may take effect in a horse veral times (as three times in the case above cited), and yet e health of the animal inoculated with the non-attenuated us remains normal; that is, the horse will have sustained a condary malleisation.

3d. According to Loffleur and St. Cyr, a first inoculation glanderous virus has a repressive influence upon a second.

4th. According to the theory of the author, horses may be ured against glanders after several inoculations of virulent atter.

5th. Spontaneous recovery of glandered horses may take ace.

The glanderous process (*malleus humidus et farcinosus*), as ell as that of syphilis in man, may be under a latent form, d horses affected with that form of glanders cannot com-unicate their disease to other horses.—*Arch. en Scien. Vet.*, *. Petersburg.*

FROM SOCIETY PAPERS.

INOCULABILITY OF DOURINE.

By Prof. E. Nocard.

Having noticed the virulency of the spinal cord in this ection, Prof. Nocard had proved to himself that the disease as inoculable to dogs. He had noticed that several of ese animals which had been inoculated with a small quantity mucous matter taken from a softened part of the cord of dourined horse had subsequently died in from six to eleven eeks after the injection, after also noticing the existence of raplegia or monoplegia associated with a well marked pro-essive loss of flesh. Since then he has often developed the sease in dogs, and has observed that the virulency of the rd could be preserved for a long time by immersing it in ire and neutral glycerine, as is done by Mr. Roux with the ains and cords of rabies.

The greatest obstacle to progress in the study of douri heretofore has been the necessity of having horses for t purpose, and the difficulty of procuring dourined animals sufficient numbers for experimentation. In the future, ho ever, cases will be collected and preserved, to furnish materi for experiments on dogs, and in this way it is likely that at early day the pathogeny of the disease will become bett known.

FROM FRENCH JOURNALS.

DOSIMETRIC MEDICINE IN CANINE PATHOLOGY. ACUTE BRONCHITIS.

By Mr. H. Jacotin.

A small pet-dog had taken a severe cold. He had chil was dull with loss of appetite, nose dry and warm, constipate painful cough, high fever, difficult breathing, mucous ral

The diagnosis was evident, and the prognosis quite serio on account of the delicate constitution and the small size the animal.

Treatment: A teaspoonful of sedlitz Chanteaud in the mor ing on an empty stomach; at intervals, Rigollot's musta plasters on the flat of the thigh; aconite, brucine, three gra ules a day; arseniate of antimony, four granules. Animal ke warm; food *ad libitum*—milk, soup, meat, etc.

Carefully carried out during three days, this treatme was followed by the almost jugulation (abortion) of t disease.—*Rev. de Med. Dosim. Veter.*

AMAUROSIS.

By Mr. A. Mansuy.

A watchdog for several days seemed not to see as close and as well as before, knocking against the walls and t doors and the furniture of the room. When examined appeared by his actions to have lost much of his sight, if n to be entirely blind. The eyes seemed to show nothing ve peculiar, except an abnormal dilatation of the pupils, whi contracted somewhat, however, when the patient was broug to a strong light.

The diagnosis established, the animal was placed under anules of arseniate of strychnia and of aconitine, of which received one of each twice a day for two days, the dose ing doubled on the third day until all were used.

On the fourth day there was but little change, though the tient seemed to act better when in the open air than in the om. The same treatment was continued with the strychnia, e aconitine being replaced by the nitrate of pilocarpine.

Two weeks later, though the improvement continued, the ght was not yet perfect. A purgative was administered, d two or three days after, repeated. This gave rise to some culiar symptoms of pain. The strychnine and pilocarpine ere kept up for a week or so longer, stopped then for a few ys, and started for a week longer. After this the sight tirely returned, and the animal became able to perform his ties as watchdog.—*Ibid.*

DOUBLE ACUTE PNEUMONIA.

By Mr. L. Mesnard.

A dog three years old became affected with a great diffi- lty of breathing. He was dull and drooping, had no appe- te, temperature, 39.3°. Upon auscultation, all the symptoms double acute pneumonia were present and well marked. e was immediately placed under treatment, with aconitine, eratrine and digitaline, two granules (½ of a milligram) a ay, in a small piece of meat. Two days later the dog was ore cheerful and had a little appetite. He had, however, a ard, painful cough, for which he received two granules of odeine with the preceding treatment combined. Recovery ccurred in a few days.—*Ibid.*

SERIOUS ATTACK OF JAUNDICE.

By the same.

An Irish setter, about three years old and very valuable r hunting purposes, had lost his appetite and was very dull. wo days before he swam across two rivers. When seen he as not willing to move nor to answer the calls that were made to him. The mucous membrane had an icteric hue we marked, and the diagnosis was simple.

Treatment: Two granules of hyosciamine, one of brucin and one of digitaline, the three together every two hours wit black coffee mixed with carrot bouillon.

No change appeared on the next day, and a large sinapis was then applied under the abdomen, but principally towar the liver, to be left on four hours; the same medicine to b continued.

The next day improvement was evident, which continue until recovery, four days later.—*Ibid.*

ACUTE MENINGITIS.

By the same.

A Newfoundland dog, four years old, had refused his foo for one day, and moved about in his kennel in a manner s strange that his owner began to fear rabies. He howle occasionally, but not with the characteristic howl of rabie and when lying down and urged to get up, he did so co plainingly and with faint, painful groans. When on his fee he stood with his head hanging down. His eye was dull an partly closed and the walk trembling. He refused all kind of food, and no efforts that were made were sufficient t excite any manifestations of a rabid state. It was a simpl case of acute meningitis, and for treatment, aconitine, ver trine and digitaline were prescribed, one granule of eac every two hours,

No change appeared the next day, unless perhaps th convulsive movements had abated. These disappeared th following morning and the standing became firmer, the wal better, the appetite improved.

The treatment was continued for five days longer, an was followed by a radical recovery.—*Ibid.*

PARAPLEGIA.

By Mr. P. Bon.

A bitch which had nursed puppies for five weeks, was suc denly attacked with paraplegia. Every pup died a few day ater. The mother was dull, fed but little, moved only by dragging her hind quarters.

The prescription ordered was one granule of sulphate of strychnia every hour, hyosciamine one granule every two honrs, and every morning, milk containing a little sedlitz Chanteaud.

On the second day little or no change could be noted. Hyosciamine was continued and arseniate of strychnia prescribed in place of the sulphate, and, in addition, one granule of salicylate of quinine was given every six hours. Within forty-eight hours there was marked improvement.

The next day the patient tried to get up alone, and if assisted and standing she could take a few steps. The granules were then given every two hours, again diminished, and then discontinued, and in twenty days recovery was complete. —*Ibid.*

FROM GERMAN JOURNALS.

By R. Middleton, D.V.S., Philadelphia, Pa.

A PECULIAR DISEASE OF SWINE.

There appeared in Rodingen toward the end of August, 1891, a peculiar and at once pernicious disease of swine which developed the following characteristics: The victims were invariably of the female sex, and in the diversified stages of pregnancy. The animals reclined quietly, refused food, and evidenced somewhat accelerated and difficult respiration. In twenty recorded cases the temperature varied from 101½° to 103° F., and pulse 90 to 120. The posterior extremities were apparently involved in a paralyzed condition, which involved the rectum and bladder to such an extent as to preclude their use by the patient.

Clysters of irritating substances had no effect upon the mucous membrane of the bowels, which was constantly filled with feces. Catheterization yielded a urine, normal in color and consistence, though somewhat increased in quantity. Locomotion of an uncertain and unsteady gait was possible, but the animal's volition apparently exercised no control of the hind limbs. The disease lasted from two to ten days; discoloration of the cutis was not noticeable. Recovery was seldom, and only occurred in those cases where the patient retained the government of rectum and bladder. Upon post-mortem, nothing in the nature of a pathological lesion was remarked, but in the several cavities from two to fifteen quarts of an amber-colored coagulable fluid was collected. Most of this was obtained from the thorax and lungs, the latter showing numerous emphysematous localities and interstitial tissue swelled by the liquid referred to. The remaining apparatus of the thoracic and abdominal cavities displayed no alterations discovered by the eye or microscope. Colon always filled with dry feces. Treatment was without result, and animals recovered that had not received therapeutic consideration—*Woch. fur Thierheilkunde.*

THERAPY OF PENETRATING WOUNDS OF THE HOCK.

A horse of the army which had received a blow upon the tibio tarsal articulation exhibited a puncture of the same, with small quantities of escaping synovia, but little or no swelling.

The wound, after being well cleansed and dusted with iodoform-tannin, was neatly closed by a small tuft of cotton. Adjacent to the wound, the cutis received a coating of ung. cantharid. Later the cotton was removed and in its stead we endeavored to obliterate the puncture by repeated applications of iodoform-collodion. After two hours patient applying, the gentle oozing of secretion (synovia) had disappeared, and a tenacious covering secured. After the lapse of a few days the patient was discharged, and again resumed the march.

Also in two other cases where the same cause produced the same effect, the results were equally favorable. In one of these the animal could not be left behind, the lameness assumed painful proportions. The march came to an end at the termination of fourteen days, and the patient was given he usual application of ung. cantharid.; absolute quiet was njoined. The articulation remained thickened, but recovery vas attained.—*Ztschr. f. Vet. K., iv.*

ZINCUM CHLORIDUM IN VETERINARY PRACTICE.

Since bandaging of the upper portion of the extremities nd loins in the larger domestic animals is of great difficulty, has been recommended to irrigate the wounds at these oints with zincum chloridum. For this purpose the satura-ed solution, and not the crystallized product, are in requisi-ion. The latter is a solution of the metal in hydrochloric cid, of the strength 1:3; this liquid is further diluted with vater sufficient to double the amount. A ten per cent. solu-on in conjunction with zincum oxidum is a successful ethod of treating abraded injuries upon the gluteal mus-les.—*Thier. Woch.*

THERAPEUTIC NOTICES.

As an anti-itch application, Klein prescribed a salve of ie following ingredients :

℞ Lanolin, ℥ ijj,
Vaseline, ʒ v,
Ag. Destill., ʒ vi,
M.

Sig.—Apply to part every three hours.—*Berl. Woch.*

Prof. Demme, of Bern, suggests sod. cantharid. to be used slowly granulating wounds from scalds or burns. He in-ects subcutaneously every third or fourth day sod. cantha-id. gr.; six to eight hours subsequently the wounds so treat-d exhibit a hyperæmic appearance, and are moist.—*Berl. Voch.*

Journ. de Med. Paris recommends for fetor of the oral avity these two prescriptions, which are to be used as or-inary collatorium :

℞ Thymoli, gr. viij,
Boracis, gr. xv,
Alcoholis, f. ʒss,
Ag. Destil, ℈j,
M.

℞ Ac. Salicylici,
Saccharini,
Sod. Bicarb., aa ʒjss,
Alcoholis, ℥v,
M.

Sig.—ʒj dissolved in glass of water.

Reuter, of Carlstadt, recommends lysol as the most effectual and safest disinfectant for the treatment of aphthæ epizooticæ, or foot and mouth disease. For the feet he uses a salve made from 365 parts of lysol, 10 carbo. liqui and 100 of vaseline, to be applied twice or three times daily. The stomatic ulcers and those upon the tongue were three times per day subjected to a three per cent. to five per cent. lysol salve, which in aggravated cases also contained alum. The stalls and appurtenances were likewise cleansed in a three per cent. lysol solution. As a prophylactic measure, animals not manifesting symptoms of the disease were also treated to washing of the oral cavity and feet in a five per cent. lysol solution.—*Landw. Presse.*

FROM ENGLISH PAPERS.

HOW TO PREVENT TUBERCULOSIS IN CATTLE.

Professor M'Fadyean says: Even supposing that tuberculosis, like pleuro-pneumonia, were a disease peculiar to cattle it would be a matter of the gravest concern to know that 20 per cent. of our dairy cows are affected with it; but still greater misgivings are excited in one's mind when it is remembered that tuberculosis is the same disease as that which is commonly called "consumption" when it attacks human beings.

In both species the disease is called by the same bacillus nd every case of the disease has its starting point in the inroduction of one or more of these germs into the body of he individual attacked. It is quite permissible to maintain hat the danger of the transmission of tuberculosis to memers of the human race through the eating of meat or drinkng of milk from tuberculous animals has been exaggerated, ut the danger certainly exists, and to a degree that gives uman sanitarians a right to urge the necessity of devising neasures to check the spread of the disease among cattle. But even without that, the great loss which the disease inlicts on farmers and dairymen is surely sufficient incentive to lo whatever is feasible in the way of prevention. And that aises the question, Is tuberculosis a preventable disease?

To this question an affirmative answer may be given withut hesitation. There are one or two very well known, but enerally misinterpreted, facts that have an important bearng on this question. Why are cattle, above all other domesicated species, the victims of tuberculosis? Not altogether, s some suppose, because their tissues furnish a specially suitble soil for the growth and multiplication of the tubercle acillus. Sheep are so rarely the subject of tuberculosis that t is doubtful whether any natural case has been observed in his country, and yet we know that when attempts are made o infect sheep with that disease, the experiment succeeds vell enough. Again, both experiment and observation have hown that the tubercle bacillus, when once it gains entrance o the system of a horse, is capable of setting up a deadly orm of the disease, and yet the proportion of tuberculosis mong horses is insignificant. These facts suggest that the revalence of tuberculosis among cattle may be less due to ny inherent susceptibility of the ox tribe than to something n man's method of keeping these animals. May it not be due n great measure to the fact that cattle, particularly dairy ows, as they are commonly kept in this country, are found n circumstances specially favorable for the transmission of he disease from the affected to the healthy animals? No vell-informed person now imagines that overcrowding can enerate tuberculosis; but what everyone must see is that the more constantly animals are housed, and the smaller and worse ventilated the buildings are in which they are confined the greater will be the risk of the disease spreading, provided there is one tuberculous individual in the stock. A cow that is the subject of tuberculosis of the lungs expels tubercle bacilli from the air passages in the act of coughing. These bacilli, when desiccated, rise as particles of dust, they are then apt to be inhaled by other inmates of the same building Such in the great majority of cases is the mode of infection in the case of cattle, and hence the two main things to be attended to with a view to prevention are—(1) To permit no animal suspected of being tuberculous to stand in the same building with other animals; and (2) to see that the buildings in which cattle, and especially dairy cows, are housed, are roomy and well ventilated. To provide sufficient air-space and adequate means of ventilation in the most obvious manne diminishes the risk of one animal infecting another. No wild animal in a state of nature has ever been known to die from tuberculosis; and, with the exception of the few cases i which the disease is inherited, or transmitted to the calf b means of the milk, cattle of even the most susceptible breed remain free from tuberculosis as long as they are not housed In short, tuberculosis is a disease of domestication—of clos housing and bad ventilation.

Long before the discovery of the tubercle bacillus, an even before it was generally recognized that tuberculosis i contagious, medical men had come to the conclusion that insufficient ventilation had much to do with the prevalence c the disease among human beings, and a most convincing proo of the correctness of their view was furnished by the sudde decline in the mortality from phthisis among our soldier when a greater air-space per man and better means of ventilation were provided in the barracks. There is every reaso to believe that, in like manner, a great check would be put t the spread of the disease among cattle if byres were mad larger and better ventilated.

Sanitarians are agreed that in ordinary human habitation a cubic capacity of 600 to 800 feet should be provided fo ach individual; and where, as in hospitals, the apartments re occupied during the whole twenty-four hours, 1,000 feet s considered not too much. And yet it is reported that some ounty councils and the local authorities are hesitating about xing the cubic space for dairy cows at 800 feet, and some ave actually recommended that this may be as low as 450 eet. Government has already been urged to apply radical easures for the suppression of bovine tuberculosis, and some o not hesitate to recommend the system of slaughter and ompensation now in force against pleuro-pneumonia. The atepayers may form some notion of what this would cost the ountry if 10 to 20 per cent. of adult cattle are already atacked, and if byres, from insufficient space and defective entilation, are to remain veritable hot-beds for the propagaon of the disease.—*Veterinary Record.*

THE OFFORD ELBOW PAD.

According to the *Veterinary Record* (England), this new ontrivance is one of the best of all the appliances known, deigned for the relief of horses affected with that annoying rouble known as lapped elbow.

All sorts of pads have been invented with a view to obvite the evil of pressure on the injured part, but all have failed o give satisfactory results, and animals which are liable to uffer from the injury in question are still, now and then, laid p disabled for various periods of time. The new invention s due to a layman, and according to those who have used it is incomparably the best of its kind.

It consists of a long pad, slung from above, in such a maner that it hangs just under the sternum, extending rather eyond both elbows. Its action seems to be to effectually rotect the elbow from pressure while the horse is lying own, and thus to cause the disappearance of the unsightly umors by gradual absorption.

Those who have used this pad affirm that their experience ustifies them in saying that it has given them entire satisfacion, and that it acts equally well in cases where both elbows are affected as when the trouble is unilateral. It causes no discomfort to the animal, and does not prevent him from lying down.—*Ibid.*

DIABETES MELLITUS IN A HORSE.

By Thomas Walley, M.R.C.V.S., Principal of the Royal Veterinary College, Edinburgh.

While diabetes insipidum (polyuria) is of very common occurrence in the horse, the graver form (d. mellitus) is very rarely met with, or perhaps it would be more correct to say that it is seldom diagnosed; consequently, the relation of an indubitable case may be of interest to the veterinary surgeon.

With the exception of the occurrence of sugar in the urine of azoturic patients I have not hitherto met with a case in which I had reason to suspect that sugar was present in the urine.

On the 6th May, 1891, I was requested by Mr. D. to examine an aged chestnut hunter, and to give my opinion as to his condition.

History.—The owner stated that the horse had been ill for some time, that he had observed that whenever he mounted him the animal seemed to yield under his weight, that although in good spirits at the commencement of his work, the horse appeared to become abnormally fatigued after exertion that he had lost condition, and that he had been under the care of Mr. John Aitken, Dalkeith.

Eliminating by enquiry the probabilities that the illness was due to worms, indigestion, or diabetes, I proceeded to make a careful examination.

The symptoms presented were, unthriftiness of the skin which was dry and tolerably firmly adherent to the underlying tissues; the coat dry and harsh; pulse 60, wanting in tone but regular in rhythm; temperature 103° F.; respiration normal; visible mucous membranes injected and somewha icteric.

The muscular wasting was most marked in the lumba region. Suspecting renal mischief, I withdrew (and collecte the urine then contained in the bladder, and on its withdrawal I observed that it was of a pale primrose color. In the absence of any positive symptom it occurred to me that the case might be one of diabetes mellitus, and an analysis carried out, under the guidance of my colleague, Dr. Aitken, by Greig Smith verified my suspicion, sugar being found in tolerable quantity.

TREATMENT.—Reasoning that the diabetic condition was in all probability due to derangement of the liver and to indigestion and mal-assimilation, I advised that the horse be put on a diet of bran, linseed, and malt mashes, with skim milk, and that he should receive daily a dose of nitro-muriatic acid and inf. of quassia, with a dose of aloine every third day at noon. I saw the horse only once afterwards at Mr. Aitken's stables, on which occasion he did not show any signs of improvement.

Subsequently, as no progress towards recovery was made, the owner of the horse expressed his intention of shooting him, but Mr. Aitken persuaded Mr. D—— to turn him out to grass and give him another chance. He was accordingly put out to graze during the day and stabled at night, and although at that time he could scarcely walk to pasture he eventually improved, although very slowly, and in the middle of February the owner informed me that he was in good condition and doing his work well. In answer to my inquiries Mr. Aitken, Jr., subsequently stated that the animal had for several years suffered from repeated attacks of polyuria, these attacks being most observable after a day with the hounds, and that the polyuria was usually checked by the administration of a few doses of tonic medicine with or without iodine.

Mr. Aitken further informed me that in 1890 the animal had an attack of influenza (pink-eye) followed by pleurisy, after which irremediable diabetes set in.—*Journal Com. Path. and Ther.*

SANITARY BULLETIN.

EXTRACTS FROM STATE VETERINARY REPORTS.

ILLINOIS—*Actinomycosis.*—The following tables, obtained from the annual report of the Board of Live Stock Commissioners for the State of Illinois, exhibit fully the extent to which that disease prevails among the cattle of that region:

ANIMALS AFFECTED WITH ACTINOMYCOSIS, ISOLATED AT THE UNION STOCK YARD AND SLAUGHTERED.

MONTHS.	Number isolated.	Number released.	Number affected and slaughtered.
1890. November	280	8	272
December	203	4	199
1891. January	182	12	170
February	119	9	110
March	129	5	124
April	100	12	88
May	155	7	148
June	150	12	138
July	217	15	202
August	186	16	170
September	223	13	210
October	315	20	295
Total	2,259	133	2,126

ANIMALS AFFECTED WITH ACTINOMYCOSIS, ISOLATED AT THE NATIONAL STOCK YARD AND SLAUGHTERED.

MONTHS.	Number isolated.	Number released.	Number affected and slaughtered.
1890. November	10	....	10
December	8	2	6
1891. January	9	....	9
February	6	....	6
March	7	1	6
April	4	1	3
May	9	1	8
June	9	....	9
July	13	...	13
August	12	1	11
September	17	....	17
October	27	....	27
Total	131	6	125

TABLE OF STATES, WITH THE NUMBER OF CATTLE AFFECTED WITH ACTINOMYCOSIS SHIPPED THEREFROM TO THE UNION STOCK YARD, CHICAGO.

	MONTHS.	Illinois.	Iowa.	Wisconsin.	Missouri.	Kansas.	Minnesota.	Texas.	Nebraska.	Indiana	Michigan.	Ohio.	Colorado.	Kentucky.	Dakota.	Totals.
390.	November . .	35	54	23	22	21	20	52	21	11	8	5	. .	. .	. .	272
	December. . .	29	44	24	17	19	22	12	9	10	7	6	. .	. .	. .	199
391.	January. . . .	23	34	21	15	17	19	. .	14	11	9	7	. .	. .	. .	170
	February . . .	22	30	13	8	10	10	. .	5	6	4	2	. .	. .	. .	110
	March.	23	32	14	10	9	10	2	9	7	6	2	. .	. .	. .	124
	April.	16	24	12	. .	9	10	. .	8	4	3	2	. .	. .	. .	88
	May.	26	37	19	10	11	15	5	12	8	5	. .	. .	. .	. .	148
	June	18	26	15	13	11	14	29	9	3	. .	. .	. .	. .	. .	138
	July.	2	39	20	13	12	15	27	17	5	. .	. .	20	9	. .	202
	August	21	34	18	12	10	13	21	15	8	. .	. .	18	. .	. .	170
	September . .	26	37	23	20	18	21	23	17	8	2	. .	. .	. .	15	210
	October.	34	47	27	31	26	28	27	23	10	7	. .	21	14	. .	295
	Totals.	298	438	229	171	173	197	198	159	91	51	24	59	23	15	2,126

Tuberculosis.—There were two outbreaks. In one county herd of 60 cattle was inspected, of which nine were found ffected, and three looked upon as suspicious. In another erd, 18 out of 24 were found by post-mortem examination adly diseased by Prof. Withers.

Glanders.—During the year 1891, 137 animals were found ffected, and 467 had been exposed. The diseased ones were laughtered, with five of the exposed ones. Average damges paid by the State being allowed for each diseased ani ıal, $33.83; and for exposed ones, $73.00.

Dourine. — There have been no new cases in the State uring the year, and there now remains but one diseased ıare, and three suspicious cases in quarantine.

Pleuro-pneumonia.—There is none and no prospect of its ppearance, if carefully watched for.

LOUISIANA.—*Anthrax* has been less prevalent than in the ıst two years. There have been but one or two isolated ases.

Rabies.—A pronounced case of rabies occurred in a horse luring the year. He died exhibiting the most characteristic ymptoms. There have been, however, a number of rabid logs destroyed.

Glanders.—Several outbreaks have occurred. 62 horses and mules were affected and destroyed, all the carcasses being burned or buried, and all sanitary disinfecting measures applied.

MINNESOTA—*Glanders.*—The following report for February, 1892, shows a marked decline in numbers: Remaining on hand February 1, 30; reported during the month, 7; killed during the month, 7; released during the month, 16; remaining isolated, March 1, 14. Most of them are "suspects" and are kept under observation. The disease is steadily decreasing in the state.

STAFF OF STATE VETERINARIANS OF ILLINOIS.

J. CASWELL, V.S., State Veterinarian.

ASSISTANT STATE VETERINARIANS:

Joseph Hughes, 2537 State Street, Chicago, Ill.
A. H. Baker, 2537 State Street, Chicago, Ill.
R. J. Withers, 2537 State Street, Chicago, Ill.
A. Maguire, 1446 Wabash Avenue, Chicago, Ill.
B. A. Pierce, 625 West Madison Street, Chicago, Ill.
J. F. Ryan, 175 Michigan Avenue, Chicago, Ill.
J. E. Hill, 101 West Adams Street, Chicago, Ill.
Wm. E. McGarth, 625 North Madison Street, Chicago, Ill.
L. C. Tiffany, Springfield, Ill.
Walter Tomlinson, Alexis, Ill.
C. A. Pierce, Elgin, Ill.
J. F. Pease, Quincy, Ill.
B. F. Swingley, Freeport, Ill.
J. Stallman, Pontiac, Ill.
J. J. Walker, Olney, Ill.
O. J. McGurty, Paris, Ill.
F. R. Rowan, Kirkland, Ill.
A. G. Alverson, Bloomington, Ill.
Chas. W. Johnson, Elburn, Ill.
Matthew Wilson, Mendota, Ill.

J. F. Reid, Decatur, Ill.
C. M. Paxton, Kansas, Ill.
W. A. Baker, Gibson, Ill.
A. D. Melvin, Sterling, Ill.
James Bond, Streator, Ill.
P. C. Dodge, Rochelle, Ill.
H. G. Pyle, Jacksonville, Ill.
W. F. Weese, Ottawa, Ill.
S. V. Ramsey, Tuscola, Ill.
James Addison, Aledo, Ill.
A. J. Ziegler, Lincoln, Ill.
Thomas Hope, Waukegan, Ill.
B. B. Page, Rockford, Ill.
J. C. Booker, Carrollton, Ill.
John C. Stewart, Danville, Ill.
I. J. Miles, Charleston, Ill.
Thomas E. Feron, Bushnell, Ill.
J. D. Nighbert, Pittsfield, Ill.
John Scott, Peoria, Ill.
F. H. Armstrong, East St. Louis, Ill.

OBITUARY.

DR. WILLIAM R. BIRDSALL.

The medical fraternity of New York City will regret the loss of one of their members, Dr. W. R. Birdsall, as that of one of its most active and promising members, and some of the younger graduates of the American Veterinary College will realize an additional reason for regretting his loss by recalling the fact that for two years he lectured to them in the department of Helminthology.

NOTICE TO THE VETERINARY PROFESSION.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the United States Veterinary Medical Association will be held in Boston, September 20th, 21st and 22d next. It will be our first meeting with a three days' session, giving assurance of a full discussion and consideration of all matters brought before us.

The unfinished discussions of our Washington meeting will be then completed, and all the preliminary work for our International Meeting in 1893, will be considered. Reports and papers will then be presented as follows, upon which a full discussion will be indulged in, which certainly will make an intructive and enjoyable session:

The most interesting and important Committee Reports. The food supply—an important topic. The veterinarians' position on the meat and milk supply of our land.

A paper by Dr. D. E. Salmon on the "Scientific Investigations of the Bureau of Animal Industry."

Original work in the field of "Rodents,"—important discoveries with a summary of the wide field opened for research, by Dr. S. E. Weber, of Pennsylvania.

"Veterinary Science in Agricultural Colleges and Experiment Stations," by Dr. W. L. Williams, Perdue University.

"Strongylus Armatus," by Dr. J. F. Winchester, of Massachusetts.

"Army Veterinary Cases," by Dr. D. Lemay, U. S. Army.

A paper by Dr. Tait Butier of Mississippi, on "Professional Ethics as related to business interests," and one or two others to be announced later.

Application for reduced rate of fare on all railroads has been made, and a royal reception is promised by our Eastern friends.

All State and local Associations should take immediate steps to have duly appointed delegates present.

By order of
R. S. Huidekoper,
President.

W. Horace Hoskins, *Secretary*,
12 South 37th St., Philadelphia.

SUNDRIES.

Upon the Value of the Meat from Tubercular Cattle.—(Ueber die Verwerthung des Fleishes von tuberculosem Schlachtvieh. *Centralblatt f. Bakteriol. u. Parasitenk.*, Bd. xi., No. 14.)—Perroncito, who as early as 1874 and 1875 (*Ann. der kgl. Akad. f. Landwirthschaft in Turin*, Bd. xviii., 1875) stated his belief in the absence of any danger to those eating the flesh of tubercular animals from the transmission of the disease, calls up his former position to corroborate it from a richer experience. During 1890-91 he conducted an extensive series of experiments upon guinea-pigs, puppies, pigs, and horned cattle, which was summarized before the International Congress of Hygiene in London, and in the congress at Paris for the study of tuberculosis, during the last summer. The meat obtained from the public slaughter-houses in Turin was fed in several experiment groups to pigs, and the juices were injected into puppies, guinea-pigs, and cattle. More than two hundred puppies and quite as many guinea-pigs were subjected to these experiments, the meat-juice, or a watery extract of the meat, being injected subcutaneously or into the abdominal cavity. After intervals of six weeks, two, three, or more months, these animals were killed, not a trace of tuberculosis being evident. Two cattle were subjected to subcutaneous injection of the meat-juice, and when killed, six months later, showed no sign of the disease. Four pigs, six months old, were fed for four months on the flesh from tubercular cattle, without exhibiting the least evidence of acquirement of the affection. A litter of twelve pigs, aged two months, were fed for five months on the flesh from tubercular cattle; several died from other diseases, and the rest were all killed at varying periods, without any tubercular lesions being found. Two pigs were fed for three months on flesh from tubercular animals, and afterwards fed with tissues in various grades of tubercular changes; when killed they showed not the least evidence of having acquired tuberculosis.

Great Mortality Among Horses in Russia.—The terrible famine which has prevailed in Russia since last Autumn, producing such dreadful results among the human population, has been also very disastrous to horses. In the British consul's report on trade and commerce in Taganrog, just issued from the Foreign Office, in reference tc the effect of the famine, mention is made that up to last January it was estimated that 500,000 horses had died in the province of Samara alone. From a calculation it was believed that of a million of horses no more than 400,000 would be alive at the end of last month, and these would be in such an exhausted condition as to be useless for heavy agricultural labor. This is, indeed, a serious matter, not only presently, but prospectively, as it will require many years to replace these animals, and agriculture will accordingly suffer, even if the seasons should prove propitious. We do not hear that the starving peasants availed themselves of the flesh of the horses as food, and it might be inferred that they did not, but like our soldiers in the Crimea, preferred to perish rather than consume such food. The French at Metz and in Paris in 1870–71 were not so "nice."—*Medical Record.*

IMMUNITY.—Professors Brieger and Kitasato, and Dr. Wassermann, working in Koch's laboratory, have found a method of preparing a substance which confers immunity to animals from infective diseases such as typhoid, diphtheria, cholera and tetanus. The bacilli of these diseases, with their culture fluids, are exposed to the action of extracts of thymus gland at a temperature of 65° to 80° C. This kills the bacilli, but leaves in the fluid an antitoxine which confers immunity. Immunity seems to be secured rather easily and in various ways in experimental laboratories. What is wanted is something that works in practice. Recently Dr. G. Taruffi has reported a sixth case of tetanus cured by the antitoxine of Tizzoni and Cantani, and this has an encouraging look.—*Medical Record.*

A WORTHY SANITARY FEAT QUIETLY ACCOMPLISHED.—It is alleged for General Rusk that he has greatly improved the treatment of cattle exported to Europe for food purposes. The mortality among them at sea, resulting from cruelity, want of water, etc., was formerly stated at sixteen per cent., while at the present time it is one per cent. The value of these exportations is not far from $25,000,000 annually. If this statement is only partly true, General Rusk has accomplished a great sanitary reform, for he has been the means of indirectly purifying the flesh-food supply of thousands of European consumers.—*N. Y. Medical Journal.*

AMERICAN VETERINARY REVIEW,

AUGUST, 1892.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—ome twenty-nine years ago a few of the veterinarians and ractitioners of the Eastern States came together and oranized the United States Veterinary Medical Association, nd since that period this organization, one of the earliest—if ot in fact the first—in the country, has persevered steadily in s work, until to-day it has reached a position which entitles to be considered one of the most efficient and useful bodies f its kind in the country, and upon which veterinarians may ot only look with pride for what it has been in the past, but om which they may largely anticipate the inauguration, in e future, of measures calculated to contribute to the elevaon of the profession, and its consequent usefulness and onor. Originally organized almost wholly by members reding in the Eastern States, its limited roll of membership as been enlarged, until it numbers to-day over 250, and s constitution and by-laws have been adopted and imitated s the guide of professional activity and co-operation in nearly very State in the Union. From a comparatively insignifiant body, it has become a powerful institution, and the inuence it wields is now recognized and felt by all well-meang veterinarians in every portion of the land.

The success which has been achieved by the Association due to the working-spirit of its entire membership, and the fficiency of the labor thus contributed must be largely attribted to the good judgment of the various official boards which have succeeded each other in giving application and direction to the co-operating activities of the whole. These facts are well known by all its friends, and it is with this grand retrospect for their encouragement and inspiration that the Association is now preparing to hold its twenty-ninth annual meeting in Boston.

As we stated in our last number, and now emphasize, the business which will be introduced at the coming meeting will be of unusual interest, and besides the usual committee reports, will include the election of officers, the reading of papers, discussions, etc., and will be of special interest by reason of the arrangements which will be determined upon in relation to the meeting which is to be held the following year during the Columbian Exposition in Chicago.

One of the important subjects to be determined at the coming meeting, and which needs to be carefully considered, is the election of the board of officers, principally that of president. It has been customary for some years back to choose for that position gentlemen who were already incumbents of the place, and the usage has become so uniform that a re-election after one term was almost looked upon as a conceded prerogative, and a first election has, therefore, become, practically equivalent to a nomination for a *second term of office.* If this arrangement is still to be understood to be the regular order of the Association, the election to the presidency at the Boston meeting will, accordingly, mean the presidency at the Chicago International Meeting; and that the fact of holding so honorable a position must prove to be of great value and dignity in a professional point of view, no one will question. It is certain that if there are any ambitious aspirants to the honor, they are already busily preparing the way to a nomination, and, if we understand matters rightly, some of our best men and most energetic workers are already making interest and laying plans for securing the honor of their elevation to the presidental chair. Who would have thought of such a thing in 1863?

Well, whoever may be the successful aspirant, let the Association bear in mind that the next two meetings are likely o bring upon that body and upon its presiding head a wide observation and a resulting repute of the utmost importance o its status and to his personal standing. The meeting in Chicago, if it can be made to partake of an international charcter like those which have been held in Europe, will be ooked upon as the culmination of what may be considered he anniversary of the birth of an American veterinary proession, and on such an occasion it is incumbent on the United States Veterinary Medical Association to have as its recogized head a man in the presidential chair who will not only e, after the old manner, a re-elected officer, but one who can tly fill the position of the representative leader of progress nd elevation of veterinary science in America in 1893.

VETERINARY SOCIETIES AND THEIR OBLIGATIONS.—These rganizations are of comparatively recent date, and, in fact, e need only to look a few years back to discover a period hen, with two or three exceptions, no such bodies existed n the United States. Within a recent period, however, they ave greatly multiplied in number, in fact, quite in proporon to the progress otherwise which has marked the profesion. And to-day there is scarcely a State without its genral society, and in several instances these are supplemented y local organizations working independently of the higher ody. The creation of these bodies was welcomed by every ne, and we took pains to particularly congratulate their oranizers and to welcome their calls for meetings as among e most important signs of a forward movement among vetrinarians.

We certainly had no reason to doubt the intentions of our olleagues, and when from the beginning we received their vitations to attend their meetings, and were handed the inutes of their proceedings, we gave them the hospitality f our pages, together with all their transactions, papers and iscussions. All this time we felt that these societies were uly realizing one of their most important *obligations* toward e profession, and we prepared ourselves, as one of the orans of veterinary medicine in America, to show them that e were fully in accord with their views, and quite willing to reciprocate as well as we were able to, whatever good offices they might render to us, and our, and their professional brethren. But the enthusiasm seems to have lacked permanence, and like a lightly laid bonfire of shavings which at first flashes with brilliant effect and promise, but soon becomes exhausted, is now, if not entirely dead, to be seen in the ashes which marks the place where it was. Only this remains, without even a spark to illuminate the spot, and only dark obscurity remains.

Why is this? The work of veterinary societies belongs properly to the veterinary profession. The papers that are read at their meetings, and the discussions which follow, ought to be diffused among the veterinary fraternity. And so long as our veterinary journals are comparatively so silent concerning our veterinary societies, the question will press itself upon the inquiring mind as to what is the trouble? Are the societies dead, or are the veterinary journals to continue to be ignored by them, and the work that is done in their meetings remained buried under the ashes of their first and deserving efforts, now wholly spent?

Certainly the few items which have appeared in some of our late journals cannot be compared with the reports which were given to the public but a short while ago in the pages of our veterinary publications. What is the cause of the change? Can the secretaries of our societies inform us?

Rats as Disease Carriers.—During a visit received some time since from Dr. S. E. Weber, of Lancaster, Pa., he told us of the somewhat interesting work in which he had been engaged, in investigating the field of pathology of some of the rodentia—more especially that of rats—and the results which he had obtained from numerous post-mortem examinations. These had been of so satisfactory a character that he felt, in duty bound, to place himself on record as one of the first explorers in his chosen field, and with this in view he has already put some observations in print, besides reading a long paper on the subject before the Keystone Veterinary Medical Association.

The fact that, so far as we know, the rat has not hitherto een made the subject of special investigation, is rather a peuliar one when we consider the intimate connection existing etween this little animal and our ordinary human economies hrough the mutual surroundings of both, as occupying the ame domicile, and coming in such frequent contact, both as eighbors and belligerents.

Dr. Weber has, we think, selected an interesting line of inuiry, and one which may lead to valuable discoveries in repect to the conveyance of communicable diseases, if not in ther directions also.

ORIGINAL ARTICLES.

EQUINE DENTISTRY.

aper read by E. H. Shepard, D.V.S., before the Ohio State Veterinary Medical Association, Columbus, O.

I do not propose, by presenting for your consideration this aper on the above subject, to give you anything like an exaustive treatise on this important branch of our daily work. or, in the first place, I could not if I would, as age and exerience forbid. But as there may be some here even younger han I in this class of work, their attention I especially desire. nd to all, may what I have to say act as a wedge whose sharp oint enters the hard knot, and opens it for the benefit of all. o may some truth, be it new or old, follow the time-crack f experience, deep into the storehouses I see before me, nd beneath the blows of good intention, although hurled with trembling arm, may they open and yield up their wealth of easure, the choicest products of years of thought and labor, the discussion I hope may follow.

As often as I find some new complication in my chosen ork, not told to me from the lecture desk, nor laid down in ny of our standard works, then I wonder have others all arned this or that fact only by experience, dearly bought at hat, perhaps, and if so, how slow are we not to more often eek the advice of those who are older in experience than we;

and further, for our mutual as well as individual good, the value of these brotherly gatherings cannot be estimated, and I wish that we might meet more often than we do.

To my mind this subject of veterinary dentistry has been and is sadly neglected among the majority of veterinary graduates. The needed work, even among the patients of our best patrons, has been overlooked, till the traveling dentist with his showy kit and bag of samples has stepped in and taken more away with him than has been our portion for a long time, and leaving behind the well-founded insinuation that *we* are of no account as dentists. And if his conscience is unusually small, much work has been perhaps heedlessly done, and by his failure to accomplish the wonders he has predicted in the eyes of many, we also suffer in due proportion. Few there are in any occupation who become specialists, but the greater part of the needed work in connection with a horse's teeth does not require a specialist, still the operator should be perfectly familiar with the anatomy and requirements of each individual part which goes to make up as a whole one of the most complicated portions of the body, and the part, to say the least, upon whose completeness health, even life, depends. Even if he be not a skilled operator, his knowledge and logic should at least ensure his patient against any operation that would be detrimental to his welfare.

No rule or series of directions, however complete, can be laid down that will cover all cases, for even in the simplest work conditions are found widely differing, which require such treatment as is only applicable to the case in hand Nevertheless, we do find under the old law of cause and effect, when existing at all, certain conditions better termed irregularities, which are universally the same. And, here as in other departments of the work, the treatment is wholly palliative. The character of the work performed by the teeth of a horse precludes any condition but that of constant change hence the importance of extreme watchfulness over those we wish to cherish and always see at their best.

Aside from the conditions above mentioned, accidents frequently occur, which are not, as a rule, discovered till th effect has been produced, and even then, somewhat from the inability of many to make a thorough examination, the existing conditions are overlooked or neglected until most serious results have arisen. The examination of the mouth and its contents is a matter of ease to many, but to some an almost unsurmountable obstacle; and let me here say that scarcely anything will so impress the observer with the efficiency of an operator as to see him fearlessly examine with the hand, all portions not visable to the eye, using no gag or speculum to aid him or irritate his patient.

In making an examination several preparatory observations are essential. General appearance of the animal as to make up, bodily condition, external symptoms of age, etc., with special notice as to disposition, size and shape of head, eyes, ears, external enlargements or peculiarities, etc., then a decided mentally expressed conclusion as to age, as shown by incisors corroborated by previously noticed indications, followed by a most thorough examination of the mouth and its contents, with special notice for anything abnormal or in the slightest degree peculiar. Probably the most common work in connection with the teeth is what is known as "dressing" or "floating," removing the sharp edges and corners which are usually found on the external border of the superior molars and internal border of the inferior, due to the non-wearing of these parts as the process of change steadily progresses.

To do this properly requires some amount of skill, as the edges should be dressed but little lower than the plane of the table-surface of the tooth; and as we seldom find the teeth in regular line, the work becomes the more complicated as the irregularity increases. Again, take one sharp corner or point of any shape and dress it to the plane of the tooth, and you have left, in the place of one long one, two or more sharp, ragged edges, not unlike the border of a newly-filed saw, necessitating the finishing touches of a fine instrument directed with care. And then consider that each superior molar has two external ridges, and each inferior, one to two internal ones; not a single one but may possess the above mentioned projection, and we find that the finishing touches are the most particular if not the larger part of the work.

To ensure the most confidence and quietness of the patient every precaution should be taken to prevent injury to the tongue or cheeks, by protecting the rasp as much as possible with the hand. And one thing, in this connection, which I oppose entirely, is doing any work on what may be termed the push stroke. All cutting should be done on the draw stroke; then no injury or annoyance can occur from the rasp suddenly catching on any irregularity and jumping with more or less force into the cheeks or throat, as it is likely to do in the old way.

My experience has been that the fifth and sixth molars in a middle-aged or old horse, as a rule, are in worse condition than the anterior ones, for the reason that the lateral motion of the jaws at that point is much less, consequently the projections become long and often exceedingly ragged and sharp. And it is here, where the greatest care is needed, that so many operators partially or completely fail to do the work properly. I have examined work where the rasp had failed entirely to reach beyond the fourth molar. Slight peculiarities will often be found which the file will easily temporarily rectify. If the first superior molar projects with a point anterior to the first inferior molar and needs dressing then, in nine cases out of ten, you will find a similar projection on the sixth inferior molar projecting into the mouth behind the sixth superior molar, and *vice versa* if the inferior molars should be the most anterior. These projections sometimes become so long as to necessitate the use of the cutters, but unless of unusual size, "discretion is better than valor," for the work of the rasp is the safer and more satisfactory.

Again we quite often find that, from the excessive width of the superior molars, the outside of a portion of the inferior molars, generally the three posterior, has become worn down nearly or quite to the border of the alveoli of the tooth, and the inside extends upward to the upper jaw; thus these portions of both upper and lower molars shut by, so to speak, and often are imbedded in the soft structure surrounding the tooth—perhaps the bone itself. But if the irregularity is not so great, and decay has not set in, the molar cutters may be brought into use and the extra length removed, which will temporarily relieve the animal and retard decay. If decay is already well advanced they should be extracted as the only alternative for the preservation of the animal.

And again, from the excessive hardness of some one or two teeth without any other logical cause, they have worn away their opposites—perhaps only a little—but often have burrowed deep till decay of the latter has resulted, and we have again use for the extractor and also the cutters, with the always finishing touches of the rasp.

Among the class of colts that are handled for speed, I find that attention is often much needed. The rapid wear of the deciduous teeth, especially when the animal is being conditioned for fast work, is surprising ; for instead of the soft food which nature intended, the more solid grain is required to toughen the whole system and put it in a condition to stand the continued strain of a full mile at the limit of speed. And not only do sharp points and projections rapidly appear, but they leave their mark on tongue and cheeks that must submit to the restraint of bit and rein.

The operator is sure to have his patience tried in handling this class of work—for in the first place we are dealing with an animal not fully educated—everything is new to him, and we are especially handicapped by the smallness of the mouth, and not unfrequently its cut and bruised condition has been the immediate cause for attempt at treatment. Nothing but a fine rasp should be used for this class of work, and the best operator cannot use too much care.

The veterinary should be thoroughly conversant with the period of deciduous and permanent dentition, for in the above-mentioned class of colts, whose worth oft times cannot be estimated, his service will most often be required and his judgment considered. Removing the deciduous teeth is often required to prevent abnormal conditions, and did the operator not thoroughly understand at what time the usefulness of each tooth expires he might easily make a serious mistake.

Not long since I removed what remained of a third inferior deciduous molar from a horse seven years old. The cap had become firmly wedged in between the second and fourth permanent molars, and the third permanent had forced its way up and by on the outside almost its entire width out of line. And soon after I also removed both corner and lateral deciduous incisors from a horse of nine years, the permanent teeth having grown up in the concavity of the incisor arch. Not infrequently the cause of three and four-year-olds being "off their feed," as expressed by the owner, is entirely due to the retarded shedding of the deciduous molars.

The extraction of teeth becomes necessary from a number of causes—chief among them is decay. And when thus affected, and not from any particular aggravating cause, the fourth seems to be the most susceptible, undoubtedly because of its greater age. And when I find a fourth or fifth molar thus diseased, almost invariably the opposite one in the same jaw is likewise similarly affected. From numerous accidents and special causes we are often obliged to extract a tooth from a young horse. And when we see him a few years later, and notice the opposing tooth of the one drawn, then we will realize how fast the teeth may push into the mouth and how fast the rest are wearing away. The tooth just mentioned must be kept at a length corresponding to the adjoining teeth, as any excessive length interferes with mastication, not only in passing the food backward, but by forcing portions of it into the cavity left by the extraction of the offending tooth, thus gathering fuel for greater complications. To be obliged to extract a tooth because of the excessive length of its root is not of frequent occurrence, still such cases are sometimes found. It was my privilege to treat a case of this kind which I will briefly describe. A small, grey mare, of perhaps 900 pounds weight, and five years old, was brought to me by the owner, who said that for some time he had noticed a small bunch growing on her jaw, and recently it had come to a head and discharged freely, but now persistently refused to heal. I made an examination and found a small, hard enlargement directly beneath the root of the third inferior molar, and the probe soon found a small opening in the bone. An examination of the tooth revealed also a small opening into the mouth along the external surface of the tooth from which a discharge was also issuing. As the whole alveoli seemed to be involved, I decided to extract the tooth, which was immediately done, and the tooth found to measure within one-eighth of an inch of the combined length of the width of the jaw and the height of the adjoining tooth.

And lastly, I will call your attention to an abnormal condition not often found, but, when existing, it proves to be a veritable thorn in the flesh, a cause of much misery to the possessor, with anxious wonderings and expense to the owner, namely a seventh molar. I have here for your examination a specimen that came into my hands about one year ago; it is the bones of a head containing, in addition to the usual number of teeth, a seventh molar, with the results of its growth showing only tco plainly the history of a life of misery.

The possessor of this extra molar was a beautiful mare at three and four years of age, and when with very little handling she trotted half a mile in 1 : 16, eighteen years ago, the owner thought he had one of the best and fastest the State afforded, and so offered to match her against anything of her age in the State, barring one. The following year he could not keep her in condition to do fast work, and as year after year went by she grew worse instead of better, and being disgusted he put her to breeding. But in time they noticed she did not feed even as well as usual, and at times would quid out some of her hay, so her teeth were dressed by home talent. Still she did no better, and at last, in her nineteenth year, a self-styled practical dentist was called in and he extracted a portion of a decaying tooth—only a portion, for the balance still remains—and then dressed her teeth as he considered they should be. At last, during her twentieth year, she received a kick, breaking her thigh, and was then destroyed. After death the condition of her teeth was noticed and a friend called my attention to it.

Now, as you see, the extra molar is a left inferior seventh, a portion of the sixth having been broken off by the dentist before mentioned. The rest of the teeth are in fair shape for an aged animal. But the inferior right molars are much lower than the left, because of the extra work she put upon them, one having become much decayed. As this seventh molar grew and pushed into the mouth it passed upward, striking first the posterior part of the superior sixth, and wearing it away, passed on into the bone. In its upward course it passed through the alveolar tuberosity of the superior maxilla, making an opening into the maxillary sinus, also one through the palatine process of the sup. maxilla into the nasal cavity and destroying the palatine foramen. The inflammation extended to all parts adjacent, even so far as to destroy the integrity of the orbital surface of the molar bone.

The suffering this poor brute passed through is beyond comprehension, and I now hope that her *known* fate will be the means of saving from a similar one any that may chance to come under the care of those to whom this knowledge appeals.

I might go on and mention other irregularities which in each case become special and require treatment applicable to the case, but I have already occupied too much of the valuable time of this meeting. But in conclusion, let me say, this is a branch of our work which we cannot afford to neglect in the least, as it is fast growing into favor with-horse owners in general; and if we would keep up with the times, our work must compare favorably with that of the traveling gentry who would rob us of our legitimate work.

MODE OF DISPOSING OF OUR DEAD.

Paper read before the Ohio State Veterinary Medical Association.

By W. H. Gribble, D.V.S.

When requested by our President to prepare an essay for our annual meeting, I was at a loss to know what to write about, so finally decided to depart from the custom of symptoms, cure, etc., and speak on a subject which we, in conjunction with the medical profession and the whole world at large, are interested in, especially from a sanitary point of view, where prevention becomes more essential than cure; in fact I know of no subject of greater importance, and it is somewhat surprising to see what little attention is given it by our sanitarians, how little it is understood by the public, and by no one thing is the health of the people placed in so much jeapordy as where beneficial hygienic reform is of so much importance; I mean, "In the disposal of the dead," viewed by the light of modern science.

The question of what shall we do with our dead, is one that concerns only the living, and has for many, many years been the subject of attention by leading sanitarians. As far back as 1539 we can find literature bearing on this important subject, and at the present time several writers are giving the facts in reference to the dangers of our present mode of burial.

There are three methods spoken of for the disposal of dead: First, mausoleum; second, earth-burial; third, cremation. The first is that method recently advocated in New York, and which consists of an enormous building, divided and subdivided into compartments or vaults, wherein the dead are to be hermetically sealed. The objections can be raised to this, that in time the building would crumble and decay; and the whole scheme is not feasible, when we consider the number of dead in any given number of years.

Second, earth-burial. Within the last twenty years, scientific men, with hardly an exception, have universally condemned this method; its dangers have been recognized for three hundred years, for as far back as that, efforts were made to compel all cemeteries to be established outside of city limits. In the light of modern science, how can intelligent men believe in earth burial, for the pleasing illusion of pleasant sleep in the grave has been thrust aside and in its stead we are shown, that from the moment life leaves the body, be it man or animal, putrefaction begins its slow and loathsome process, passing through the different phases of putrid decomposition, too horrible to behold or describe. This decomposition is simply oxidization, and may vary ten, twenty, one hundred or one thousand years, according to circumstances; it is simply the process of burning, a process which, during life, supports it, and which after death continues, until no part of the material composing that life remains. Mausoleum, metalic coffins, hermetically sealed cases, only retard the work; but, sooner or later, cases and bodies alike must yield to the life-supporting oxygen. Sir Henry Thompson says no dead body is ever placed in the earth without polluting it; so that after burial the bodies of those dying of contagious or infectious diseases are still a source of danger. The plague of Modena, in 1828, was shown by Prof. Bianci to be due to excavations made among the burial-places of those dying of plague three hundred years before. In 1843, a small town in England was almost depopulated by disease caused by using the rich soil of an old cemetery to enrich their gardens. The cholera of London, England, of 1854, is believed by men of science to have been caused by upturning the soil where were buried the plague-stricken of 1665, nearly two hundred years previous. In 1853, during the epidemic of yellow fever in New Orleans, the mortality of one certain district reached the enormous per cent. of nine-twentieths, nearly one half the population of that district, being double the death-rate of any other part of the city, and in this district were three large cemeteries, in which, the year previous, more than three thousand bodies had been laid to rest. Dr. Freire gathered dirt a foot under the surface over the remains of a person dying of yellow fever a year or more previous, and found, under the microscope, that this dirt was full of yellow fever germs. Dr. Koch, of Germany, and Dr. Carpenter, of England, state that the blood of animals dying from splenic fever may be dried, pulverized and kept for years, and still the disease germs survive, with power to produce that dreaded disease. Darwin, as early as 1837, showed the agency of earth worms in raising from below to the surface, and Prof. Pasteur's experiments have proven that earth worms bring to the surface myriads of bacteria from decomposing dead, that positively contain the specific germs that propagate disease. Some sheep dying of anthrax were buried very deep in the field where they died, and for ten or twelve years this pasture was not used; but when it was, sheep began to die of anthrax, although none existed in the neighborhood. Pasteur demonstrated that the disease had been brought to the surface by earth worms, from the remains of the previous cases. Many cases are recorded where sickness and death resulted from the use of water near cemeteries; and almost any physician can testify that in case of an outbreak of disease, it is invariably the worst near a grave yard. Within a radius of ten miles of the City Hall of New York, dwell about three million people, with an annual death-rate of sixty thousand, which, if we allow for quick computation one hundred pounds to the body, gives them the enormous quantity of three thousand tons annually of decomposing material to be disposed of, and Dr. Parker says that every putrefying human body will give off annually about fifty feet of carbonic acid gas: so you can imagine the purity of the air in and about the neighborhood of thickly populated cemeteries, without considering the pollution of the earth and water, and the danger existing from contagious or infectious diseases.

Philadelphia has eighty thousand graves so located that they drain into the city's water supply, and Philadelphia is not the only city with the same trouble.

These things do not form a pleasant subject to contemplate, but they still remain facts.

Dr. J. D. Beagless says that in Calvary cemetery of New York, in the public part, a trench is dug, seven feet wide, ten or twelve feet deep, and of indefinite length, in which the coffins are stowed away tier upon tier, making a flight of steps five or more deep, and with not sufficient earth to hide one layer from the next. Dr. Felix Formeto states that in New Orleans, where subsoil water is often found a few inches from the surface, and the soil of such a nature as to absorb and retain all sorts of poisonous matter, that they have there adopted a method of burial, which is carried out with very few exceptions, described as follows: Instead of the corpse being deposited in the ground it is placed in tombs or oven-like places above ground, generally badly constructed and exposed to the aternating influences of excessive moisture and a burning sun. No disinfectant is used either in the coffin or in the vault, and, to make matters worse, most of the cemeteries are overfilled and located in the heart of the city. What a picture for the contemplation of sanitarians ; and these methods are those of vaunted Christian burial. Christian, indeed; why Christian? religion has no more to do with the disposal of the dead than it has with sewerage or any other sanitary measure. Earth-burial seems to have become the custom about the fourth century, and whether adopted by the so-called Christians to distinguish their religious sect, or because the body of Christ was not cremated, is to us in the light of the nineteenth century of little importance; it is a question that concerns only the living, and shall we, as reasonable beings, continue to follow a custom blindly, hoping that we shall not be harmed? or shall we so dispose of our dead friends? leaving the living none the worse for their having died.

Dust to dust, ashes to ashes, is the requiem to us all. We must undergo oxydation—we have no choice in the matter; but we may choose whether we prefer the slow, loathesome, offensive process as carried for fifty to a hundred years after the mode of earth-burial, or the quick, clean and beautiful method of incineration—being reduced to ashes in an hour in the rosy glow of a crematorium.

Third—Cremation.—Cremation is simply a clean process of accomplishing in an hour what requires years and years by earth-burial, without the gloom and offensiveness of the grave, or its dangerous accompaniments. It is simply nature's method of oxydation hastened and purified ; yet it is strange how little it is understood, some even speaking of it as the new-fangled method, while many suppose the body to be actually burned in a fire. In reference to the antiquity of cremation or earth-burial, early Greek literature gives neither the preference; both are spoken of, cremation seeming to be reserved for the noted.

In the story of the Trojan wars, we are told that the great chiefs were incinerated so that their ashes could be returned to their native land. Jewish history, in 1st Samuel, chap. xxvi., verses 12 and 13; Amos, chap. vi., verse 10; Jer., chap. xxxiv., verse 5, tells us of cremation. In 1812, during the retreat of the French from Moscow, thousands of French soldiers who died were burned by the Russians. In 1814 more than four thousand soldiers who had died in the battles around Paris were incinerated. In 1870, after the battle of Sedan, the same was done; all in the interest of sanitary science, to destroy powerful causes of disease and promote public health. Nearly all scientific men speak in favor of cremation, and we believe when properly understood, sooner or later, it will become general.

In our own country there is Dr. Beagless, who never fails to advocate as a veterinarian what he knows will promote health; and Dr. J. F. Lemoyne, who, besides using tongue and pen in its favor, built at his own expense a crematorium in which his remains were cremated. Prof. Samuel Gross said: "If people could see the human body after the process of decomposition sets in, which is as soon as the vital spark ceases to exist, they would not want to be buried; they would be in favor of cremation. Burying the human body, I think, is a horrible thing. Why, if people knew what physicians know, what they have learned in the dissecting-room, they would look upon burning the body as a beautiful art in comparison with burying it. When I die I want my body to be cremated."

Objections of a religious nature have been raised against this method, but they are frail and fast fading away, and some of its most zealous advocates are Christian ministers; and in Italy, where the Roman Catholic Church formerly exercised an intense opposition, this opposition has apparently ceased, and in Rome itself a crematorium is in actual use; in fact Italy as a nation is in the advance in favor of this method. Paris is not far behind, and is at present prepared to incinerate at least five thousand bodies annually; and Brazil since 1887, cremates by State order all bodies of yellow fever victims. In the United States several crematories have been established, but our people as a whole are slow to accept what they so little understand, and exercise little interest in educating themselves on the subject; could they be persuaded to witness the process, its adoption would be assured, for (like myself) almost every person would be a convert to cremation. An argument in its favor is that body-snatching would be suppressed, examples of which the daily papers keep us well informed. A medico-legal argument is urged against it; that it would destroy all evidences of poisoning. To a slight extent this is true, not against the method, but shows that in all cases a careful autopsy should be had; but where non-volatile minerals were used these would be as readily detected in the ashes as in the body.

It may seem to some that the term 'economy' in reference to disposing of our dead friends is cruel; but there is hardly one of us who has not noticed the extravagance of a fashionable funeral followed by want of food and shelter due to the expense entailed. Dr. Beagless says the cost of funerals exceeds the annual product of all our gold and silver mines combined, and equals the amount of all the business failures of our country; while the total cost of cremating a body at Milan is $1.60.

Again, the value of land occupied. In the United States, with a population of over sixty millions, and an annual death roll of over nine hundred thousand, have you ever calculated how much space they occupy? Allowing six feet by two feet per corpse, an acre buries 3,360, so it requires 250 acres of land to annually lay away our dead. Actually it requires four times this amount for paths, roads, monuments, and other accompaniments to a cemetery, so wasting a thousand acres of valuable land yearly. Cremation, as before said, does not consist of actually burning the body in a fire. We have witnessed the *modus operandi* twice, and each time became more zealous in its favor. Scientific apparatus has been devised which makes the method safe, speedy and inoffensive, no flame or fuel comes in contact with the body; there is no perceptible sound, smell or smoke; nothing that the most fastidious could take exception too. All volatile substances pass through a furnace, and are absolutely pure before reaching the atmosphere, and the process, when compared with earth-burial, is simply beautiful. The method as conducted at Cincinnati does not materially differ from any other crematory. A large room or chapel is fitted up, underneath which is the incinerator proper. The body is borne into this chapel and placed on a raised dais, which is the upper part of an elevator in front of an altar. If the friends so desire, a funeral service is held, and as it proceeds the raised dais with the body silently descends into the basement, where the body is stripped of its clothing, wrapped in linen, which has previously been soaked in a saturating solution of alum, then placed in a metal plate in front of the door of the incinerator. The incinerator, which has been heated to a white heat within, by means of superheated air, at a temperature of 1,500° or 2,000° F., is in readiness, and as the door is opened, the cold air rushing in cools it to a beautiful light red tint. The body, resting on its metal plate, passes over rollers into this beautiful rosy bath and immediately becomes incandescent, remaining so until incineration is complete, which for an average body requires about an hour. The ashes remaining, which are about four or five per cent. of the weight of the original body, are dropped into an ash chamber below, and from thence placed in any suitable receptacle. The funeral service being over, the friends find the ashes on the raised dais where they last saw the body, and can do with them as they see fit. Throw them to the four winds of heaven, as was done from the Goddess of Liberty; sprinkle them on the broad waters of a river, as was done at Cincinnati; preserve them in an urn used for that purpose, or bury them in a family vault, well knowing that fire, that greatest of purifiers, had removed all danger to the health of the living from the body of our departed dead.

Fellow veterinarians, these remarks should have for us as sanitarians an especial significance, for well we know the indifference shown in the disposal of the remains of our dead patients. Glanders, farcy, anthrax, etc., are often left on the surface of the ground, and if buried at all it is exceedingly shallow; and rarely, if ever, is care taken, even in the matter of disinfection, becoming not only, as shown by Pasteur, a foci of contagion to the animal kingdom, but a daily menace to the health and well being of the human family.

ACUTE METRITIS.

By J. E. Brown, V S., Oskaloosa, Iowa.

This is the time of year when the attention of the country practitioner, here in this great horse-breeding State of Iowa, is constantly being called to the above disease, and, from the many disastrous results of it, it is well that we give the subject some special thought.

Farmers and stockmen are making a very great error in breeding their mares too early; colts are foaled in April, March, and even February. The weather is cold and wet, and comparatively few of our farmers and stockmen are sufficiently provided with suitable stabling. The result is, the mares are exposed to the disagreeable weather, chill, congestions and inflammations of the lining membranes follow; even if the delivery has taken place without undue labor and exertion, metritis, peritonitis or metro-peritonitis is established and the lives of many valuable brood-mares sacrificed.

One of the peculiarities of the disease, to me, has been its special fatalities during certain years, while similar cases other years, seemingly just as violent, and with the same general surroundings and treatment, were attended with a large percentage of recoveries. One year especially I remember of seeing a great many such cases, many of which seemed beyond any possible chance of recovery, and yet in nearly every case the treatment yielded satisfactory results. I have been unable to detect any reason for this difference, and frequently wonder if other practitioners had had the same experience.

The disease is usually ushered in with a chill, and fever following, and as we commonly see it has been in progress some little time; as the urgent symptoms come on, ordinarily somewhat slowly, there is loss of appetite, suppression of milk, restlessness, slight abdominal pain, looking back at the flanks, breathing is quickened, pulse 70 to 90 and weak, temperature 103° to 106° or even higher, occasional straining, at which times will be ejected per vagina a reddish-brown or chocolate-colored fluid, very fœtid, and thickened shreds of lymph and decaying animal tissue. On introducing the hand into the uterus the operator's attention is specially drawn to two conditions, the excessive heat, and the expansion of the walls, leaving a vast cavity, which from its acridity causes much irritation. The inflammation rapidly spreads, involving the peritoneum, intestines and other organs. The blood becoming altered from absorption, swellings, ulcers and bed-sores rapidly follow. The bowels are inactive, except in the last stages, where enteritis becomes established, and fœtid diarrhœa may occur. The belly becomes tympanitic, and there is paddling of the hind feet and staggering gait when moved. The visible mucous membranes are of a dark red or purple hue, and show petichial spots and purple streaks. Acute laminitis is also a frequent accompaniment. Comparatively few of the fatal cases that I have seen have died suddenly, but, on the contrary, have lingered along from seven to fifteen days, and then died unexpectedly when seemingly convalescing.

I append the history of a few cases which are fair samples of my experience. On May 28th, 1891, I saw an eight year-old grade draft mare from which a dead foal had been taken two days previous, by inexperienced operators, and with considerable unnecessary irritation. The pulse was running about 80, and temperature 105°, respirations short and hurried. The discharges per vagina were so profuse and so fœtid that one could scarcely stand it or remain long at a time in the stable. The mare stood up, *bench legged*, and when moved almost fell down, other symptoms in common with the disease. I began with a few good doses of f. ex. ergot, and small but frequently repeated doses of aconite. By this means I reduced the temperature and equalized the circulation somewhat, and caused a contraction of the walls of the uterus and an expulsion of the acid, fœtid fluid. I also used frequent small doses of hyposulphite of sodii (and I would recommend a more extensive use of this agent in such cases to my brother practitioner, for to me it has proven itself of great value), and small draughts of whiskey. Large doses of stimulants, especially in the early stages, I am sure are harmful. Every three hours I ordered a uterine injection of one pint each of warm water and milk, and thirty minims of carbolic acid. This would remain but a short time when it would be thrown off, and with it great quanties of the fœtid secretions. With this treatment, after a few days the general conditions improved, appetite gradually returned and the case made a nice recovery. Some uterine discharges remained for a time, and an injection containing Lloyd's hydrastis was used, and finally a complete recovery was the result. Six months later the mare was brought to my hospital and reported as showing symptoms of uterine trouble, but on examination I found a cystic calculus as large as a hen egg, and since its removal I have heard of no trouble.

Another case, in a standard breed three-year-old filly had her foal naturally, but a small portion of the placental membrane remained in the womb. The symptoms and treatment used were similar to the other, except that the bowels were constipated and gave much uneasiness; this was overcome by the use of raw oil, and the colicy pains controlled by the following:

℞ Tr. opii., ℥ ii,
Bis. Sub. Nit., ʒ iv,
Acid Carbol. Minims, ix,
Aqua ad. q.s., ʒ viii,
M. Sig.; 4 doses.

Mix each dose in one-half pint of water and give as a drench every three or four hours.

I find that many cases suffer much from indigestion and colicy pains, and the above prescription acts very nicely. This case made a nice recovery.

Occasionally the veterinarian bumps up against something that was "*loaded*," and such was my experience with a case of

DIFFICULT PARTURITION, INVERSION OF UTERUS, METRITIS, LAMINITIS AND SEPTIC POISONING.

On my first visit I found a three-year-old grade draft mare that had been in labor about six hours; on examination found an anterior presentation, with fœtus lying on right ide, and neck flecked back over the shoulders, the head esting in the left flank of the mother and under the body of he foal; I could just reach the occipit with the tips of my ingers. The walls of the uterus were so forcibly and continuously contracted that any kind of manipulation seemed impossible. After disarticulating the anterior extremities at the arpus and attaching ropes to the stubs, I replaced them anterior to the pelvic arch, and gained a little more room, then with mall forceps, made on the principle of common ice tongs, and which, by the way, are about the most serviceable little ontrivances in this class of our surgery that I have ever sed), placed on the neck, with ropes attached and drawn pon by my assistants, I finally succeeded in getting a normal resentation. The foal, however, was so large that very evere traction was required to deliver it, and considerable ritation to the parts had been unavoidable. When we nally succeeded in delivering the foal it was immediately ollowed by inversion of the womb (caused by the firm lacental attachment), but returned it with little trouble and emoved the placenta.

The treatment following was similar to that prescribed for e other cases. The next day our patient looked bright, ad some appetite, and from general appearances was doing ell, except an elevated temperature. On the second day minitis had made its appearance in a most severe form and he could not be induced to move. Temperature was 104°, ulse, 84°, respiration hurried, and an anxious expression of ce and eye.

On the third day an exhaustive discharge was being rown off per vagina, tense, fevered swellings made their ppearance about the shoulders and extended down to the arpus, also around the stifles. These swellings were very ainful, and she kept frequently putting her nose around and cking the swollen parts wherever they were in her reach.

The feet had been well poulticed all the time since laminis made its appearance. At this stage I began whiskey and inchonidia. The injections were used every two hours, as the discharge was profuse and highly offensive. For about three days very little change could be noticed, then abscesses formed in the swollen parts, and on opening discharged considerable quantities of bloody serum.

The swellings gradually disappeared and gradual convalescence followed. Tonics were cautiously administered, hydrastis added to the injecta. On the fourteenth day she was looking well, had a good appetite, and everything looked favorable to recovery up to midnight, when the attendant left her and went to bed, but on returning to the stall at six o'clock on the morning of the fifteenth day found her dead.

In summing up the treatment from which I have obtained the most satisfactory results is f. ex. ergot a few doses at first, and it is sometimes necessary to fall back to it again for a few doses as the uterine walls may become again relaxed. Small doses of aconite frequently repeated during the high temperature, and the hyposulphite of sodii.

Stimulants and tonics must only be administered very cautiously, in accordance with the symptoms presented. The injecta of water, milk and carbolic acid may be used every two or three hours, when there is much discharge, and hydrastis added in later stages.

LICE AFFECTING DOMESTIC ANIMALS.

By Herbert Osborn.

(*Continued from page* 211).

Biting Lice of Cattle. (Plate II., Fig. 8).

Trichodectes scalaris, Nitzsch.

This species, which is a very abundant one upon cattle and occurs the world over, appears to have been first technically described by Linnæus (System Naturæ, vii., p. 1017, No. 9), under the name of *Pediculus bovis*, and evidently the same species is referred to under the name of *Pediculus tauri* (*Fauna Suecica*, 1946). Nothwithstanding these descriptions, both of which were under a different genus from that in

hich it is now placed, the species was again described by
itzsch (Germar's Magazine, 3, 296) under the name of *Tri-*
odectes scalaris, and it has been known by this name in all
f the numerous writings subsequent to this description. It
as been treated by all writers upon the parasites of animals
nd is one of the best known species of parasitic insects. The
ffects upon the cattle infested are often quite serious on ac-
ount of their great number, but they are apparently less in-
rious than the suctorial species which infest cattle. This
jury depends, of course, upon the numbers occurring upon
e individual, and somewhat upon the irritability of the ani-
al infested. This species much resembles the form occur-
ng upon horses, but is somewhat shorter and the abdomen
pers less towards the extremity; the dark bands across the
domen are also more distinct. They are generally found
greatest abundance in the spring of the year, at which time
dults and eggs are discovered in great numbers. Their de-
lopment corresponds with the other species, and they are
bject to the same methods of attack.

They are very distinct from the suctorial species in ap-
arance, and this difference is recognized by practical men,
ho speak of them as the "little red lice," as contrasted with
e "blue lice," and they recognize, too, the difference in the
ouble caused by the two species.

The application of kerosene emulsion or of tobacco decoc-
on at seasons when this is practicable is effective, and we
ve found the process of fumigation described under suck-
g ox-louse to be effective, and this, of course, is applicable
all seasons of the year, even in cold weather, without dan-
r to the animal.

THE LOUSE OF THE SHEEP. (Plate II., Fig. 9).

Trichodectes spœrocephalus, Nitzsch.

Redi is credited with the recognition of this species, and
llowing him Linnæus described it under the name of *Pedi-*
lus ovis, and later still it was described in detail under the
me given above. Denny's reference to it would indicate it
rare in England, and we have not met it here, though we

have received specimens from Canada. If it is of rare occurrence it may be considered as fortunate, for, if abundant, it would be rather difficult to contend with on account of the long wool of the host.

The name indicates its characteristic feature, namely, the rounded head. The color agrees closely with the related species.

Where it occurs it would be the best plan to pay close attention to destroying them at the time of clipping the sheep, even if they are but few in number, as at any other time the labor of making thorough applications for them is greatl increased.

The Biting Louse of the Dog. (Plate II, Fig. 11).

Trichodectes latus, Nitzsch.

Something over a century ago DeGeer mentioned a specie of parasite on the dog under the name of *Ricinus canis*, whic probably referred to this species, and another mention by Olfers under the name of *Pediculus setosus* probably preceded th description by Nitzsch under the name which the insect ha borne since 1818.

Probably everyone who has had much to do with dogs i aware to what an extent this parasite may multiply and ho troublesome it is to this friend of man. It is generally believed that the lice are more troublesome to puppies than t old dogs, and it is not at all unlikely that the insects migrat when possible from older to younger animals.

In color this species agrees pretty closely with the othe species and it is of about the same length as the cat louse, little more than one millimetre, but it is much broader i proportion, being more than half as wide as long, and th head is short and the front but slightly curved.

The Louse of the Cat. (Plate II, Fig. 10).

Trichodectes subrostratus, Nitzsch.

While it is possible that this parasite was referred to b Otto Fabricius about the year 1780 under the name of *Pec* *lus canis*, the first certain reference to it appears to have een the description by Nitzsch, in 1818. Since that time it as been referred to by nearly all writers on the common par- ites of animals, but so far as we know there has been no ecial description of the different stages, and we must as- me that there is no important departure from the habits of ecies that are more thoroughly known.

It is a little more than a millimetre in length and has much e appearance of the species occurring on other domestic imals, but it is distinguished particularly by the form of the ad, which is quite pointed, and the under part of the front the head is hollowed out in a furrow about the size of a ir. This insect will often be found adhering by the mouth rts with a hair so closely held in this grove that it is some- hat difficult to tell where the hair begins as separate from e insect.

There is no record that we have seen which indicates its esence on any animal other than the domestic cat, and, dging by our own observation, it is only occasionally that ts become infested with it. When they do, the usual medies may be administered, especially a washing with rosene emulsion, after which the animal should be allowed dry in a warm place, as the fur is so fine that they dry wly.

CHICKEN LICE.

There are no less than six different kinds of lice that occur rmally on the common barn-yard fowl, and at least one er species occurring on other birds that has been recorded taken on this much parasitized species.

One of these, the *Gonicotes abdominalis*, shown in Fig. 7, te II, is said to be very common, but in this locality it has been found so abundant as the following :

It is a large, conspicuous species, about 3 millimetres in gth, quite broad, the head nearly circular in front and con- cted behind, the thorax small, the abdomen widening to r the end and terminating abruptly. The head, thorax, l legs are yellowish, with dark margins and spots ; the abdominal segments bear lateral whitish fasciæ bordered with black.

The species which seems most abundant of all is the

Menopon pallidum (Fig. 13, Plate II).

The annoyance that this species causes poultry is probably equal to that of all the other species combined, for it occurs in great abundance and almost every fowl examined will be found infested. Then, too, it passes readily to other species of birds, and many instances are recorded where horses kept near hen roosts have been very seriously troubled by them Some of these accounts seem hardly credible, taken in connection with the habits of the insect, and we are inclined t think that the worst cases, at least, may have been due to itc mites on the poultry and the migration of them to the horses though in such case we should expect the fowls themselve to show more serious injury. It is, at any rate, important t keep lousy chickens away from horses.

The louse is pretty easily distinguished from other common species infesting the hen by its light color and its grea activity, running with celerity among the feathers and fro them upon the hands of persons holding fowls. It is from 1 t 1½ millimeters in length, rather slender, and of a light stra yellow color

Remedies for this species must aim to reach the hidin places of the lice on the roosts and in the cracks of the wal of the hen house as well as to destroy those on the fow Thorough fumigation and whitewashing, with careful atte tion to cleanliness, will do much to keep them in chec Pyrethrum, kerosene, etc., may be used direct upon the fowl and if they are liberally supplied with wood ashes and roa dust they will do much to protect themselves.

DUCK LICE.

Trinoton luridum, Nitzsch. (Plate II, Fig. 14).

Redi seems to have been the first to give mention of th very common species, it being figured in the Experi. Pl. x as the louse of the teal. It is also figured by Albin (Pl. 4 under the same common name as quoted by Denny. Nitzs described it in 1818 under the name given above, and t pecies has been fortunate enough not to have received any ther designation since, although it has been mentioned in ost of the works referring to the parasites on domestic fowls r the parasites of birds. It is a very common species and ccurs on a great many different species of ducks, so it is un-ecessary to try to enumerate the hosts. So far as we have een or can learn from record, however, it is not known to ccur on birds outside of the duck family (*Anatidæ*).

Aside from these species mentioned there are many others ffecting domestic fowls; pigeons, turkeys, geese and guinea ens, all supporting a numerous host of these parasites.

We have not space here to give further details regarding em, but it may be mentioned that remedies suggested for e chicken louse apply as a rule to the other kinds and for rther details the reader may be referred to BULLETIN No. Division of Entomology, U. S. Dept. Agriculture.

EXPLANATION OF PLATES.

PLATE I.

Fig. 1.—*Hæmatopinus eurysternus*; *a*, female; *b*, rostrum; *c*, ventral surface, t segments of male; *d*, female; *e*, egg; *f*, surface of egg greatly enlarged. riginal.)

Fig. 2.—*Hæmatopinus piliferus.* (Original.)

Fig. 3.—*Hæmatopinus vituli*, and under surface last segments of female wing brush-like organs. (Original.)

Fig. 4.—*Hæmatopinus asini* (From Comstock.)

Fig. 5.—*Hæmatopinus urius*; *a*, female; *b*, male, ventral view of posterior ments; *c*, leg, showing protractile disk of tibia. (Original.)

PLATE II.

Fig. 6.—*Trichodectes parumpilosus.* (Original.)*

Fig. 7.—*Trichodectes pilosus.* (After Piaget.)

Fig. 8.—*Trichodectes scalaris.* (Original.)*

Fig. 9.—*Trichodectes sphærocephalus.* (After Denny.)

Fig. 10.—*Trichodectes subrostratus.* (Original.)

Fig. 11.—*Trichodectes latus.* (After Denny.)

Fig. 12.—*Goniocotes abdominalis*; *hologaster* of Denny. (After Denny.)

Fig. 13.—*Menopon pallidum.* (After Denny.)

Fig. 14.—*Trinoton luridum.* (Original.)

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The hair line in the figure is about one-fifth longer than it should be.

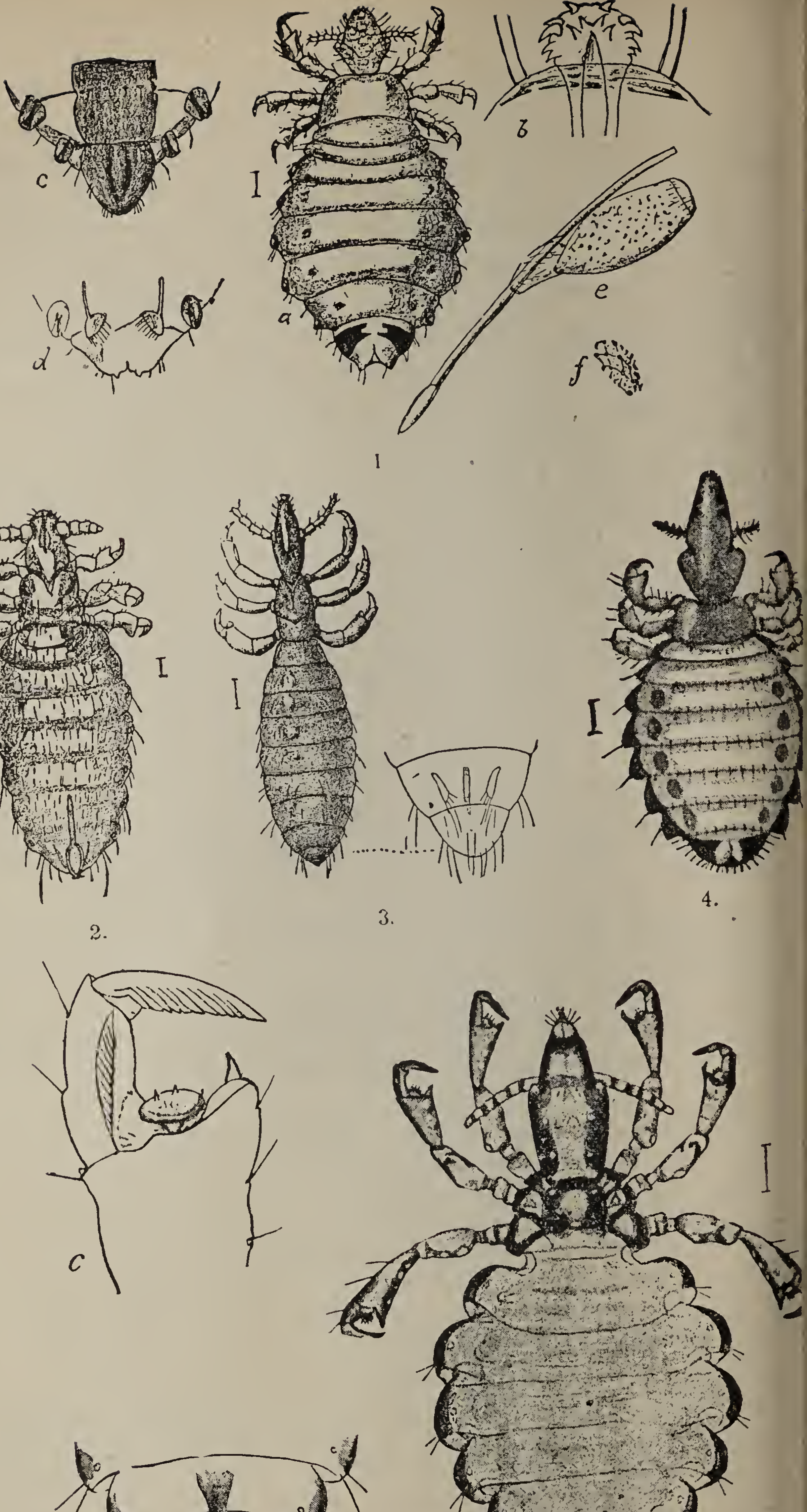
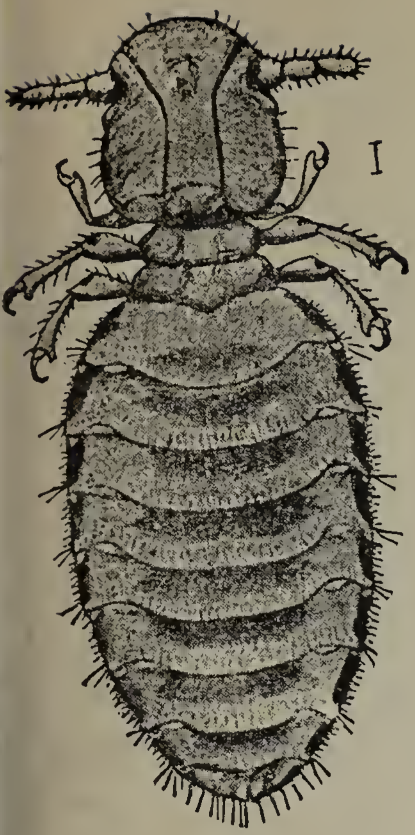


PLATE I.



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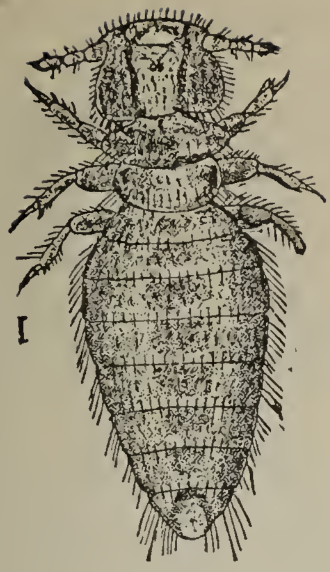

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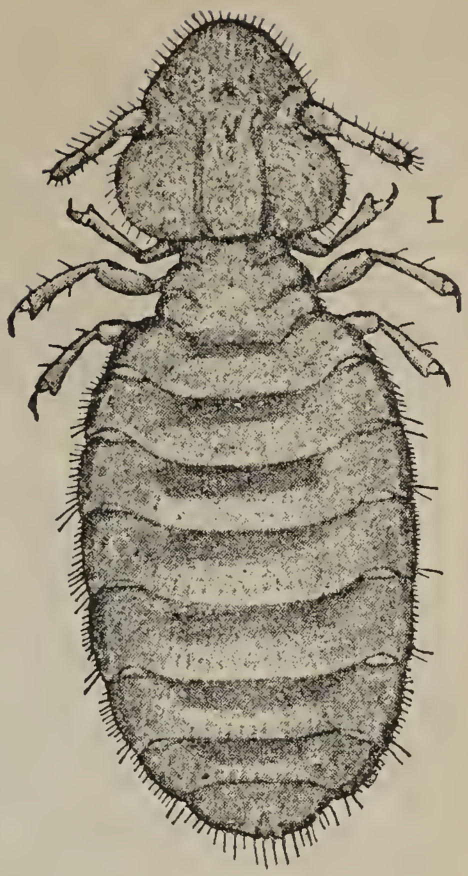

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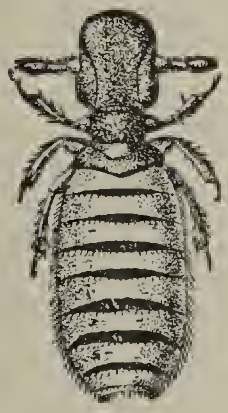

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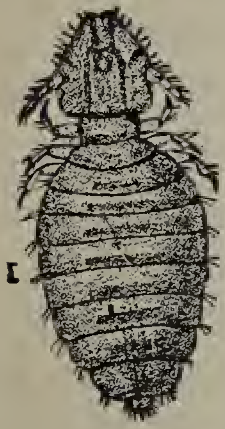

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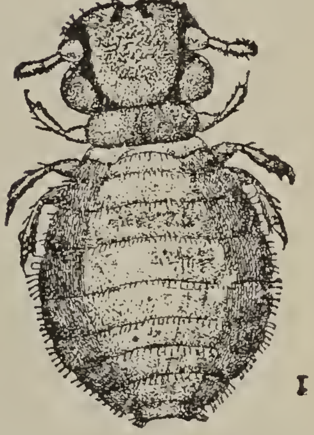

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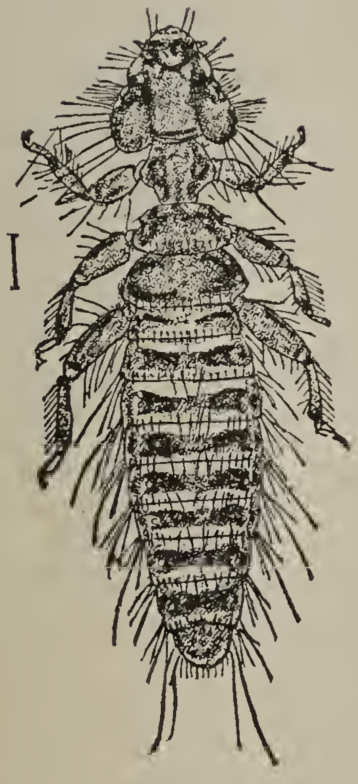

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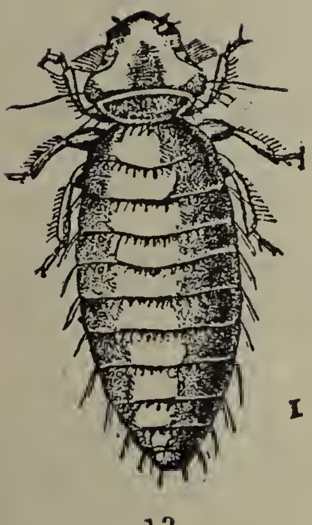

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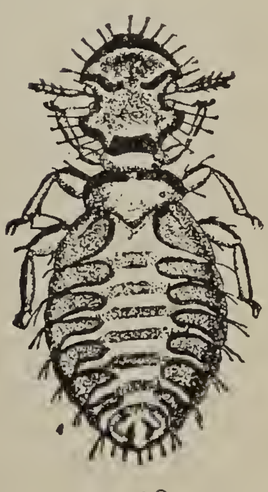

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Plate II.

REPORTS OF CASES.

"*Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.*"—VETERINARY RECORD.

One of our correspondents writes:

" I send you another small contribution, which you can make use of in the AMERICAN VETERINARY REVIEW. *I think reports of cases are really of more practical value to the ordinary practitioners than more scientific articles*, and I also think that if more records were kept of cases successfully treated, and published to the profession through the medium of our professional journals, not only the profession, but the stock-owning public would be benefitted to a much larger extent than they now are. . . . "

[If more of the two thousand veterinarians that are now practicing in the United States would act upon the foregoing suggestion, what an amount of valuable and interesting information could be obtained.—ED.]

RUPTURED STOMACH.

M. E. JOHNSON, V.S., Red Oak, Iowa

Was called to sorrel horse weighing about ten hundred pounds; was nine years old, a good livery horse; had been driven moderately all day; came in at 8 P. M. and was taken with severe pains, and wanted to lie down while being unhitched; a flatulent condition of stomach and bowels was present; gas and feces passed per rectum, frequently with violent straining; regurgitation of gas from stomach was almost constant; animal would fall on the ground with great force. The distension of the bowels from gas seemed to exist to its utmost capacity.

Later on vomiting commenced, ingesta emitted through the nostrils, hemorrhage followed. At this stage I unhesitatingly diagnosed a ruptured stomach.

A general relaxation took place. Incontinence of urine. Animal went down and death immediately followed. The greatest suffering existed throughout his sickness.

Treatment.—Ether sulphuric, tr. of ginger, hyposulphite of soda were given as a drench. Injections of warm water and oil were given per rectum, but no encouragement followed.

Post mortem.—The stomach contained ingesta of cracked corn and hay, a part of which had been emptied into the abdominal cavity through an artificial opening.

There was a brownish discoloration of the internal or epithelial surface of the left cul-de-sac, with normal patches of tissue intermingled. A portion of this discoloration was made up of cicatricial tissue, presenting a polished surface. In this portion of the stomach was an opening about the size and apparently as round as a quarter of a dollar.

An examination showed that an ulcerative process had existed for some time, and that all of the layers had been eaten through but the serous, which was ruptured at the time of the distension of this organ by gas.

There were a number of ulcerations, varying from the size of a fine shot, to the largest size buckshot, but none had eaten so deeply as the first mentioned.

There was a rupture in the inferior portion of the right cul-de-sac in the direction of its long diameter, about five inches from the pyloric orifice, of ten inches in extent; an ulcerative process had destroyed much of the tissue along this line.

Blood was found in the small intestines, and a large quantity with water in the abdominal cavity.

The left lobe of the liver was in a putrid condition.

IMPETIGO SPARSA DIGITORUM.

Dr. J. Dalrymple, V.S., Baton Rouge, La.

Amongst the various diseases affecting the tegumental system of the horse, few are so intractable, or cause so much dissatisfaction and worry to the veterinary practitioner as a genuine case of *Grease*.

The following is a short record of a case which came under our observation a short time ago, and as it has just recurred to our mind incidentally, we take pleasure in for-warding it, with the hope that it may interest and mayhap benefit some brother practitioner who has an obstinate case under treatment, should you consider it worthy of insertion in the pages of your valuable journal.

Perhaps we are going too far in apparently presuming that similar treatment has not been adopted by some, but we don't remember at the present moment having read, nor in conversation with any practitioner (with the exception of one gentlemen, who made the suggestion to us after having tried it experimentally) heard of the agent (acetic acid) applied in this disease.

Our patient was a six-year-old, dark bay gelding, about 15.3 hands high, of the cab-horse class of animal, and owned by a large firm of 'bus and cab proprietors in London, Eng.

On entering the box along with the owner, we were informed the case had been under treatment for five months, and he thought recovery exceedingly doubtful; in fact the case had been pronounced incurable, but "doctors differ," and he hoped a change of treatment might have a beneficial tendency. We need not occupy time and space in giving the symptoms, which are familiar to every practitioner; suffice it to say, that we were almost able to diagnose the case before seeing it, by our sense of smell, the fetor was so offensive. The affected limb was the off hind; it was enlarged from the top of the coronet to the lower aspect of the hock, with the characteristic cracks, discharge, etc., the enlargements known as "grapes," due to the plugging up of the ducts of some of the subaceous glands, and the retention of their secretion.

Our plan of treatment was as follows: *Constitutionally*—A sharp purgative, followed by mineral tonics. *Locally*—A poultice composed of equal parts of wheat bran and linseed meal, made the proper consistency, with hot water. In the poultice was placed and thoroughly mixed, acetic acid (B. P. strength) f. ℥iv.

A loose coat or stocking, made of stout sacking, was put on the limb, and the poultice packed inside of the leg of the stocking. This was allowed to remain on for twenty-four hours, and when removed, and the parts thoroughly cleansed of the contents of the poultice, etc., the change in the appearance of things was really marvelous. The cuticle was beautifully clean and healthy in appearance. After drying well with a soft cloth, we applied an astringent lotion composed of

Zinc Chlor., ʒ ij,
Aqua, ℥ xxiv.
Mix.

We had occasion to apply the poultice a second time only. So far as we can recollect, the only after treatment consisted in keeping the parts clean and applying the lotion for a few days.

In fourteen days from the date of our first commencing treatment, the horse was in harness doing exercise, apparently perfectly cured, with the exception of a slight thickening of the limb at the lower third, due, no doubt, to hypertrophy of the subcutaneous tissue. We saw the animal afterwards, daily at work in an omnibus, and no recurrence of the disease ever took place.

We are inclined to think that acetic acid is worthy of more extended use in chronic skin affections, on account of its detergent properties, in stimulating the glands of the skin to healthy action.

A HERMAPHRODITE.

By L. E. Willyoung, D.V.S.

July 6th last I was called to examine a Percheron animal of the equine order, about two years old. It weighed about eight hundred pounds, in good condition, and presented the following anatomical features:

Rectum in proper situ, vulva well defined but without commissure, except at inferior extremity of same there protruded a well-developed glans-penis, with urethral opening in its center, from which there was an emission of urine at regular intervals. A large mammæ, gland with two mammæ situated in usual position, characteristic of a mare. On the left side, by manipulation and rectal examination, I discovered an inguinal opening, but could discover none on right side, nor could I discover a testicle on either side. The animal seemed to possess the propensities of the male kind, and when near a mare there would appear an immense swelling of inferior portion of vulva and glans-penis just beneath the coccyx.

I cast the animal for abdominal exploration. Made an incision on right side a trifle anterior and lateral to mammæ, separated the sub-tissues, abdominal muscles and peritoneum with my fingers, and exploring the abdomen and pelvis I could discover but one testicle, *that* on the left side, which I pushed into *its* inguinal canal, as the length of its cord would not allow its removal on right side. I then made an incision on the left side, and removed the testicle as usual, which was perfect and large.

During the abdominal and pelvic exploration, I found a rudimentary uterus in proper position, and an ovary on right side, which I allowed to remain. The penis was very short, and no pelvic flexure existed, as sometimes does in such cases.

I may say that hernias are not necessarily resultant to such operations, and can in a measure be avoided by withdrawing the hand slowly from the abdomen and keeping the other arm in the rectum, pressing steady and firm against the artificial opening while the arm is being withdrawn; the rectum in this manner prevents the small intestine from escaping or protruding, and when the animal has arisen the opening is closed by the weight of the bowels on the abdominal muscles. My patient received little or no after treatment, and has about recovered.

The noteworthy features of this case are, viz.: the animal presented both male and female organs except one ovary and one testicle, which would otherwise make it a typical hermaphrodite.

EXTRACTS FROM FOREIGN PERIODICALS.

Translated by R. MIDDLETON, D.V.S., Philadelphia, Pa.

GERMAN JOURNALS.

OPERATIVE TREATMENT OF "WIND PUFFS."

After the hair has been removed by shaving, the locality is carefully disinfected by first washing with soap, and then applying a corrosive sublimate solution. A small trocar and canula is introduced into the substance of the swelling constituting the "wind galls," and the contents of these expressed. Having been successful in evacuating the tumors, the canula is left in position, and a two per cent. filtered carbolic solution is injected into and forced out of the cavity several times until the fluid discharged appears transparent. A stronger carbolic or an iodine solution is not necessary, and is even hurtful from the excessive irritation induced.

After the preliminary steps of expression and injection are accomplished, a bit of iodoform cotton is placed upon the wound made, and gently bandaged. Upon this bandage is arranged an irrigating apparatus composed of flexible, perforated metal tubing (made by Hauptner, Berlin, and costing $2.50) in such a manner that the whole region is kept moistened by antiseptic water for twenty-four hours; after which the same is removed and the locality coäted with a blistering salve.

This method has one distinctive feature of great practical importance, to wit, that by the smallest possible expenditure of water the surface is kept cool—the bandage not being too thickly applied. Those cases operated upon by myself include two of the hock, one at the carpus, and several at the fetlock. Never have we noticed remarkable swelling after removing the tubing, and have continually recorded recovery within a period of five or six weeks. In one case, a nine-year-old coaching horse, the lameness and inflammation at the fetlock was so great that the owner insisted upon killing the animal.

The modus operandi is entirely unassociated with danger when carefully carried out as previously described. An old colleague, who had performed the puncture a number of years, but who had not continued the irrigation twenty-four hours, reports to me that in some cases after four weeks he had to again puncture.

We lay the greatest stress upon the injection and subsequent expression of the two per cent. carbolic solution; when the contents are of such a consistency that they flow only with difficulty, it is possible that a second operation may be advisable.—*Berl. Thier. Woch.*

SUPERFŒTATION IN THE MARE.

It is known that mares, as a rule, cease to be in heat at the termination of six to eight days following successful copulation, but that exceptionally they may at the end of several months become again "œstral," notwithstanding that they already be pregnant. This may also be asserted of cows with equal certainty. Various opinions are current as to whether, after the second copulation, as just stated, a real fructification of the ovum can be possible. Such a condition of affairs, conceding that it may occur, is designated superfœtation, as opposed to that state induced by several copulations at one time, and which is known as superfœcundation.

Pardou relates the case of a fourteen-year-old mare being covered in March by a jack, on the eighth of April again, and on the eighth of May by a stallion. Precisely eleven months after the second connection, and ten after the third, this mare became parturient in a double degree, bearing respectively a jack and a filly. The former died in three days, and the latter never utilized the organs of respiration.—*Repert. d. Thierh.*

INOCULATION FOR ANTHRAX.

During the year 1890 the laboratory of Pasteur-Chamberlain supplied virus for 2,289 horses, 21,289 cattle, and 190,229 sheep. Of the 939 horses reported upon, two died between the first and second inoculation, and one before the close of ie year, from anthrax. Total loss, 0.31 per cent. Among ,356 cattle upon which report was rendered, 0.13 per cent. uccumbed from the first inoculation, 0.05 per cent. from the econd, and later in the course of the year, 0.19 per cent.; so iat the total fatality amounted to 0.37 per cent. Age and ice of the subjects appeared in no wise to influence the ourse of the inoculation. The 78,770 sheep whose sickness as registered yielded a total fatality of two per cent., of hich 0.69 per cent. expired after the first application, 0.14 er cent. after the second, and before the end of the year, 17 per cent. more.

As a very important factor in giving a judgment upon the omparative worth of inoculation, it is of primary necessity note that in several of these herds infection had already cured a foothold before they were subjected to the inocutions.—*Thier. Woch.*

GERMAN VETERINARY UNIVERSITIES.

The veterinary university in Berlin, during the winter mester (term) just closed, was frequented by 488 students, hich also includes 133 military assistants, 20 post-graduates, id 27 miscellaneous, studying particular subjects, and not king a regular course. The Hanover university had 205 gular students and 15 not taking the whole curriculum. he Dresden college was visited by 103 students and 10 hers. At the school in Giessen, 28 veterinary students ailed themselves of the medical course. Accurate returns the Stuttgart and Munich universities have not been reived. Altogether, exclusive of visitors taking only partial urses, the above colleges were attended by 777 students; this number may be added about 200 from the unreported lleges, making a total German scholarship of 1,000 men.

THE newest means to deodorize iodoform is to use two ops of the etherial oil of coriander to every fifteen grains iodoform.

MALET reports fœnum græcum as a green herb to be a omachic tonic and nourishing. He further adds that the flesh of animals having fed but once upon this green will emi a characteristic odor and taste. When this food, however, i withheld fourteen days previous to slaughtering, this disa greeable feature vanishes.—*Deutsch. Med. W.*

FROM ENGLISH JOURNALS.

TWO CASES OF MALIGNANT TUMORS IN THE HORSE.

By Thomas Walley, M.R.C.V.S., Royal Veterinary College, Edinburgh.

The following two cases, each of which present som points of interest, came under my notice in consultation. Fo the main points in the history of the cases I am indebted t the gentlemen in whose practices they occurred.

CASE I.—ADENOMA.

Subject—Brown cart gelding, 6 years old.

History.—The horse was first seen on the 24th of Marc by Mr. Barclay, of Dunfermline, who was informed that th animal had been purchased about five weeks previously a sound, but that, as he did not appear to thrive and had be come "pot-bellied," the owner thought the horse was th subject of worms. As Mr. Barclay did not observe anythin of a definite character, he treated the case with vermicide and cathartics.

On April 1st Mr. Barclay was informed that the horse wa off his feed and very dull, and that the abdomen seemed t be increasing in size. On visiting his patient he found tha such was the case; the pulse also had become rapid (80) an weak, the mucous membranes highly injected, the respiratio thoracic; further, on manipulating the abdomen he detecte a distinct fluctuation wave, and also a large hard tumor i the right inguinal region. He informed the owner that th animal was the subject of ascites, and that in his opinion i was the result of organic disease of one or more of the inte nal organs or of the mesenteric glands, and suggested th I should be asked to visit the case. The suggestion wa acted on, and a quantity of fluid was removed from the abd

ien. By rectal exploration the presence of several large
ard masses was discovered in the peritoneal cavity. Judg-
ig from the conditions presented, I expressed the opinion
iat the horse was suffering from tuberculosis, and that he
ould probably die in the course of a few days. The
orse died on the 3d of April.

Autopsy.—This revealed the presence of several gallons
f ascitic fluid in the peritoneal cavity, with 9 or 10 enor-
ious tumors, the largest of which weighed about 60 lbs. All
ie mesenteric, and other intra-abdominal lymphatic glands,
ere much enlarged. The liver was cirrhotic; the intestines,
leen, lungs and kidneys healthy. Microscopic examination
iowed that the new growths had an adenomatous structure.

CASE II.—SARCOMA.

Subject.—An aged Clydesdale gelding.

History.—In February, 1891, a slight swelling was ob-
rved over the region of the left hip joint, but as there was
lameness, professional assistance was not sought.

The case first came under the observation of Messrs. Reid,
Auchtermuchty, on the 17th September, when the horse
esented the following symptoms: The near hind leg was
most powerless, the position assumed being similar to that
stifle lameness. There was some tumefaction over the
gion of the hip joint, but no tenderness on pressure. On
e supposition that fracture of the upper part of the femur
of the pelvis existed, a careful examination, both exter-
illy and per rectum, was made with the object of localizing
e fracture, but no evidence of the existence of such an in-
ry could be obtained. It was observed that the animal
uld extend the leg and even rub it against its fellow. A
gh degree of fever existed; the appetite was partially in
eyance, and thirst great.

The horse was placed in slings, and hot fomentations with
imulating liniment were applied to the swollen parts.

Daily visits were paid until the 2d of October, and dur-
g the period intervening between the 17th September and
is date the swelling had increased enormously, ultimately

involving the whole of the limb down to the hock, and upwards to the haunch and anus. Defæcation was performed with difficulty, paraphymosis existed, emaciation progressed apace, and the appetite became completely suspended. In addition, the countenance became Hippocratic, and symptoms of broncho-pneumonia made their appearance,

On the 2d of October I accompanied Mr. Reid, Sr., on a visit to the case; and as I agreed with the diagnosis which had been previously arrived at, viz., that the swelling of the limb was due to the existence of some malignant disease (probably sarcoma), the horse was destroyed. At this time the horse walked with the greatest difficulty, the toe of the foot being dragged for some little distance with the fetlock flexed, the leg ultimately being extended with a spasmodic jerk.

Autopsy.—Revealed an enormous sarcomatous mass extending from the middle of the thigh to the pelvis; and on laying open the pelvis it was found that the sacro-lumbar group of lymphatic glands had become involved in the diseased process, the whole forming a large tumor.

Disseminated new growths existed in the various abdominal organs, and in the lungs and mediastinal lymphatic glands.—*Journal of Com. Pathol. and Ther.*

CEREBRAL APOPLEXY IN COW.

By the same.

Subject.—Milch cow recently calved and purchased fortnight before symptoms of illness appeared.

January 31, 1892, I was requested by the owner of th animal to visit the cow, "as she had suddenly become ver strange."

Symptoms presented were, the head elevated, neck rigi and drawn a little upwards and backwards, persistent doubl nictitation, smacking of the mouth, insensibility of pupils eyes to artificial light, rigidity of fore legs. Animal quit conscious and showed no signs of nervous perturbation on a examination being made of the mouth, nor, subsequently, c dministering medicine; rumination, appetite, and lactation uspended. Slight fever; general condition unthrifty.

Diagnosis doubtful, but from the general appearance and ondition of the animal I suspected tuberculous with secondry tubercular meningitis.

TREATMENT.—Application of croton liniment to skin beind ears, and internal administration of chloral hydrate with otassic bromide and iodide.

COURSE OF CASE.—No relief was afforded by treatment dopted; the animal daily became worse, and on the second ay complete paralysis set in, when the owner severed the arotid artery.

AUTOPSY.—Symmetrical cerebral apoplexy, a diffuse clot f blood being found under the meninges at the extreme upero-posterior part of each hemisphere of the cerebrum, ith a small clot at the inferior border of the falx cerebelli. he vessels of the velum interpositum and of the pia mater overing the nates and testes were intensely hyperæmic.—*bid.*

RUPTURE OF THE STOMACH AND VOMITION IN THE HORSE.

By William Robb, M.R.C.V.S., Glasgow.

It has been a point of discussion for some time what the ue value of vomition is, as a diagnostic symptom; some rearding it as a sure sign of ruptured stomach and, conseuently, approaching death.

The above affections being far from uncommon in this city, have paid considerable attention to vomition, and do not ar it as I once did. The following are a few of the cases I ave had recently:

No. 1.—Animal seized with colicky pains at 8:30, and sited by me at 8:50. Found great distension of abdomen, ulse almost inperceptible, sweating and attempted vomition. dministered flatulent and sedative draught; at 9:30 animal ed.

POST-MORTEM—Rupture of the stomach.

No. 2—Been bad for some hours before visited, and had been receiving sedative medicine. Animal free from pain, but otherwise as in No. 1. The contraction of inferior cervical muscles was very strong during the attempts at vomition. Dying.

POST-MORTEM—Rupture of the stomach.

No. 3.—Horse attacked at work with colic ; brought home and received sedative draught. When I saw him he resembled No. 2 in his violent attempts at vomition. Pulse full and slow, temperature below normal, distension of abdomen on left side ; died in an hour and a half after coming home.

POST-MORTEM—Rupture of stomach.

No. 4.—This case does not follow the lines of the previous ones, being the details of a post mortem of a one-year-old Clydesdale colt, found dead in the field.

On opening the abdomen, the food was found lying freel about and the stomach ruptured. The stomach occupied the greater part of this cavity, the intestines being nearly empt and pressed out of their respective positions. On the stomach being dragged along the floor and placed on the weighing machine, it was found to weigh with its contents si stones six pounds. This looks hardly possible when we consider the smallness of the stomach in the horse, but the chang must have been going on for some time, probably owing to constriction of the pyloric ring, and the animal being at grass hi illness had been overlooked. Or it may have been a congenital malformation aggravated.

There being a great similarity in cases suffering from rupture of the stomach, I will not detail any others. In Nos. 1 2 and 3, it will be noticed that *ineffectual attempts* a vomition were frequent, and that these animals died. On th other hand I have had cases in which actual vomition o eructation was a symptom treated to a successful termination To have vomition in the horse it is said we must have some lesion in the digestive tract which relaxes the mucous folds at th cardiac orifice. It is this constriction at the cardiac orific that makes gastric impaction with tympanites more fatal i horses than in those animals that vomit freely. But let it ge relaxed sufficient to allow of even eructation, and great relief is given in many cases.

It is not improbable that in those cases which vomit and cover, we have some muscular fibres giving way, thus using the above change at the cardiac orifice. As a result vomition and eructation the distended stomach gets a relief some extent ; at all events in many cases it prevents excessive cumulation of gas, until the medicine has time to act. This, course, is only a theory, but one that is generally accepted. he same effect might be brought about in a greatly distended omach through traction of the mucous coat on the rugæ at e orifice without rupture of muscular fibres ; but in those ses of slight indigestion with tympany in which relief is ven by eructation, the animal recovering in a few hours, the tter theory to my mind is the more acceptable. In those ses where we see strong attempts at vomition, it seems as if e stomach were not acting ; it being only the muscles of e body trying to perform the act, the stomach being rupred and unable to give assistance. As a proof of this, let compare it with an organ we can see and feel—I mean the erus. Many of us know its power of expulsion ; but if by cident in pressing against it we bring about a rupture, the eat power of ejection is gone, and so I believe it is with the mach.

After comparing my results in cases of *successful* vomition d eructation, against *attempted*, I am inclined to believe the ter the more serious symptom of the two, and to my mind gnostic of complete rupture.

The treatment I have found most successful is—an aloetic ll immediately on being called in, followed up by the adnistration of sodæ hyposulph, carbo. lig. and sedatives, alnated with carbolic acid, ol. menth. pip., and tr. assafœtidæ. e external treatment consists in the application of mustard the abdomen, followed by hot fomentation. Puncturing colon, I find gives no relief.—*Ibid.*

TUBERCULOSIS IN GOAT.

By W. Alston Edgar, F.R.C.V.S., Dartford.

The subject of this case was purchased from a drove of ats about two years ago, being then three years old. She had a kid in April, 1891 (which was sold when weaned), an continued in milk up to the end of October. She had the ru of the farmyard and mixed freely with the cattle, which wer all healthy except for an attack of "husk," in the autumn o 1891.

The illness commenced about the middle of November and at the end of a fortnight the animal, being utterly prostrated and refusing all food, was destroyed by order of th owner, J. F. Egerton, Esq., Estate Office, Tatton Park, Knutsford, who forwarded the lungs to me for examination, h being of the opinion that it was tuberculosis.

Unfortunately the abdominal viscera were not forwarded but Mr. Egerton remarked that "the liver contained whit patches, which he thought were abscesses."

The goat was in a fat condition up to the time of illness *but frequently went lame.*

The lungs were uniformly studded with grayish-yello nodules, no portion of either lung or lobes being healthy There were no deposits on the pleura. The bronchial lymphatic glands were enormously enlarged and hardened. Th mucous membrane of the bronchioles was in some part thickened; the lumen was blocked with mucus and containe a few *strongyles.*

I forwarded a portion of lung and lymphatic gland t Professor M'Fadyean, who reported immediately that th lymphatic glands contained tubercle bacilli, and a few day later, having examined the portion of lung, said—"It show no lesions save those of tuberculosis. The little nodules ar typical tubercles, showing giant cells, caseation, and tubercl bacilli."

There is no evidence to show how this goat became infected.—*Ibid*

REVIEW.

ECHINOCOCCUS AND STRONGYLUS. By Dr. Stiles. *Mejer*, Statistisc Beiträge zu dem Norkommen thierischer Parasiten bei Schlachtthiere (Zeitschrift für Fleisch und Milchhygiene, 1892. II. p. 125-129).

Dr. Mejer examined a large number of animals, at th

Leipzig slaughter-house, *Echinococcus hydatida* and *Strongylus paradoxus*, the lung nematode or swine.

Of 5,156 swine raised in the country and slaughtered at Leipzig between May 1st, 1890, and April 30, 1891, 196 (or 3.79 per cent.) were infected with echinococcus, generally (183 cases) in the liver. From September, 1890, to February, 1891, 843 Hungarian swine were slaughtered and examined, 181 (21.47 per cent.) of which were found infected. From May 1, 1890 to April 30, 1891, of 4,515 sheep examined, 591 (13.09 per cent.) contained hydatids. In the sheep, the parasites were found more frequently in the lungs than in the liver (436 to 17,138 cases both lungs and liver), while in swine the parasite was more frequent in the liver.

Heretofore *E. multilocularis* (*racemosus*) has been considered a rarity, but Dr. Mejer states that he found it frequently in swine, once in sheep, and that 7 per cent. of all the echinococcus hydatids found in cattle were of this type.

Strongylus paradoxus was found in the lungs of 19.03 per cent. (521 out of 2,212) German swine, and 52.02 per cent. (426 in 819) of the Hungarian swine. Dr. Mejer does not believe that this parasite harms its host except when present in immense numbers in young pigs.

Mangold. Ueber den multilokulären Echinokokkus und seine Tänia. (Berl. Klin. Wochenschrift 1892. ⅔ Ref. in Zeitschr. Fl. und Milchyg. 1892, p. 132).

Author believes he has experimentally proven that *Echinococcus multilocularis* is specifically different from *E. unilocularis* (*polymorphus*, *hydatidosus*). As specific difference of the tapeworm, he gives the size of the hooks as larger in E. *multilocularis* than in the common form, *i. e.*, hook 19-18 ; 16, base 10: 7.

These differences in the size of the hooks might possibly be *varietal* if found constant, but I have very grave doubts as to whether the author is justified in calling them specific.

Rosenberg. (B). Ein Befund von Psorospermium (Sarcosporidien) im Herzmuskel des Menschen. (Zeitschrift für Hygiene und Infections krankheiten, 1892, p. 435-440 Taf. xvii., 2 figures.

In 1862, Lindemann stated that he had found three cases of sarcosporidia in man, but authors since that time have not been willing to accept Lindemann's interpretation of the objects diagnosed by him as belonging to this group parasites.

Rosenberg now gives a case of a cyst in the cardiac muscles containing a milky substance; judging from the figures, rather than the description, this seems to be a true case of sarcosporidia. R. gives the name *Sarcocystis hominis* to the structure. It is interesting to note this "find," but we are sceptical in regard to accepting the species upon the description given.

NATURAL ORDERS OF PLANTS ARRANGED IN TABULAR FORM, and Specially Adapted for Veterinary Students. By C. F. DE JONG, M.R.C.V.S., and Lecturer on Botany in the Medical Veterinary College, Edinburgh. (Sabiston & Murray, N. Y.).

A neatly printed pamphlet of twenty pages, furnishing to the beginner in botany, and principally to veterinary students, a concise and systematic arrangement of the divisions of the vegetable kingdom.

SOCIETY MEETINGS.

SPECIAL NOTICE—UNITED STATES VETERINARY MEDICAL ASSOCIATION.

To all Members of the United States Veterinary Medical Association, and all Members of the Profession:

The Committee of Arrangements have secured a concession of the usual one and one-third rates from the Eastern Passenger Railway Association, which will, no doubt, be acquiesced in by the Trunk Line and the other Railway Association. This will be, as usual, a full fare going, with a certificate from the agent, and the one-third fare returning.

I also desire to give notice that all applications for membership must be filed in the Secretary's office on or before September 1st, in order that they may be sure of receiving consideration at the Boston meeting. The afternoon and evening of the second day will be spent by the Association on a trip, by the courtesy of the Massachusetts State Veterinary Medical Association.

Two other papers in addition to those announced in the last number of this journal will be offered for the consideration of the Association.

All State associations, through their proper officers, will give notice as soon as appointments of delegates are made by their respective associations.

The following amendment, offered at Washington, will come up for action at this meeting:

"ARTICLE I. Any applicant for membership shall submit his name upon one of the Association's application blanks, duly vouched for by one or more members of the Association, or by the resident State Secretary of his respective State. He shall be a graduate of a regularly organized veterinary school which shall have a curriculum of at least three years, of six months each, specially devoted to the study of veterinary science, and whose corps of instructors shall contain at least four veterinarians. If of a medical school, a similar curriculum as to time shall prevail."

This alteration to go into effect after the annual meeting of 1892. It shall not be retroactive, nor apply to applicants who were college matriculants prior to its passage.

W. HORACE HOSKINS, *Sec'y.*

R. S. HUIDEKOPER, *Pres.*

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Ohio State Veterinary Medical Association convened at the Hawley House, Cleveland, Ohio, June 28, 1892. Meeting called to order by Vice-Pres. Dr. Derr, at 2 P. M.

The attendance was smaller than for many a previous meeting, there being about twenty present; this was a disappointment to many, as the railroad fare was only half fare, and we had expected an overflowing meeting.

New members proposed were Prof. A. H. King, of Cincinnati, and Dr. F. E. Barnett, of Painesville; both are graduates of the Ontario Veterinary College.

Drs. Geo. Butler, W. C. Fair and A. H. Logan, requested letters of withdrawal and the same were granted, although the Association regretted to lose any member. They have a perfect right to withdraw; in fact we have of late lost several members from withdrawal, because they desired to engage in the manufacture and sale of veterinary medicines.

Dr. Butler regretted to leave the Association, but could not conscientiously remain a member, according to the code of ethics, and do as he intended to do.

Dr. Howe read a communication from the Secretary of the United States Veterinary Medical Association, in reference to the meeting to be held in Boston, and personally urged all members to attend.

The first subject brought up for discussion was barren mares and the treatment. Dr. Derr stated he had just paid $10 for an impregnator, consisting of a rubber bulb, etc., which he thought worth about 25 cents, and of no service whatever.

Dr. Hillock thought the article was a great deal like the veterinary medicines on the market; there was a popular demand for them. and the demand was drawing veterinarians into this popular tide, for the purpose of making money.

Drs. Butler and Howe thought barrenness due, far more often to a flaccid non-contractile cervix, than to a contracted one.

Dr. Shepherd stated examining a mare which failed to become pregnant, and found the cervix dilated almost the full width of vagina; used astringent injections for a week, placed the mare to the stallion, and she become with foal.

It was the unanimous opinion of all present, that impregnators as advertised were useless.

Adjourned until 7:30 P. M.

EVENING SESSION.

Dr. Derr in the chair. Meeting called to order at 7:45 P. M.

Letters were read from Drs. Liautard, Hoskins, Hinckley and others.

Dr. Fair stated that at the present time there was probably one of the finest collections of fast horses at the Cleveland race track that was ever there, and suggested the members visiting there in the morning. It was decided in following his suggestion, instead of having a meeting to-morrow.

Dr. Tanner suggested a little exchange of ideas on our knowledge, or rather our ignorance, of the pathology and treatment of parturient apoplexy. Some members present had most of them recover under any treatment, while others had them nearly all die, and Dr. Gribble stated having fifteen cases during the present month (June), and had had fifteen unerals, whereas, in 1891, seven out of ten recovered during same month. He had spent plenty of money experimenting with new alkaloids, had used stimulants, sedatives, the cold pack, and almost everything he had ever read of, and actually he believed one was as good as the other, at least the results ooked that way.

"What success have you had with tarsal tenotomy for the relief of springhalt?" was the next question; but few of the nembers present had tried it, and then with not very gratifying results. Prof. King had performed it a few times in Cincinnati, two or three times with good results, while others were complete failures; and one seemed cured at the time of operation, but it gradually got to be almost as bad as before.

The remainder of the evening until midnight was spent in a sort of social session, when the meeting adjourned.

Wm. H. Gribble, *Secretary.*

OBITUARY.

Honorary Professor F. Saint-Cyr.—The death of Proessor Saint-Cyr took place on the 12th of June, and involves he loss of another among the celebrated workers in veteriary science. He graduated among the foremost of his class, in 1846, at the veterinary school of Lyons, and soon became ngaged in the congenial work, to him, of teaching, until in 1850, when he was appointed by his *alma mater* to the position of clinical teacher. Working his way by degrees, according to the slow methods of advancement characteristic of European institutions, he was in 1866 appointed to the professorship of pathology, internal clinic and pathological anatomy, the duties of which posts he continued to fulfil until 1885, when, relinquishing his labors on account of failing health, he received from the Secretary of Agriculture his title of "honorary" professor.

Professor Saint-Cyr has written much during his professional career, and the *Journal of Medecine Veterinaire*, published at Lyons, contains numerous articles of interest from his pen. Two of his most important works, viz., his "*Treatise on Veterinary Obstetrics*" and a "*Manual of Exploration of the Chest of Domestic Animals*," have been adopted among the classics in veterinary literature.

We regret to announce the death of Dr. Emilio Charum, which took place on July 4th. Dr. Charum graduated at the Columbia Veterinary College in 1883.

CORRESPONDENCE.

AN INQUIRY.

HILLSBORO, OHIO, July, 1892.

Dear Sir.—I have read somewhere, I think outside of our journals, that electricity has been recently applied to diagnose the state of a horse's foot when prick has been suspected.

Usage is to put one pole of a battery in contact immediately above the hoof, the other pole in contact with the shoe. If the hoof has been pierced to the sensitive part, the horse will feel the electric current and become irritated; in the other case, the current cannot pass through the foot.

This may be an old idea to many, but it is something new to me. Yours very respectfully, S. R. HOWARD, V.S.

[Some of our readers may give Dr. Howard information. It seems to us that the subject was presented in the *Chicago Medical News*.—ED.]

PRACTICE FOR SALE.

A good country practice, including office fixtures, such as desks, bottles, chairs, etc.; good driving horse, five years old, road wagon and harness. Located in a fine city of about four thousand inhabitants. No competition. Fine breeding country. Price $300 cash. Address Sabiston & Murray, 916 Sixth Avenue, New York.

AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1892.

EDITORIAL.

TUBERCULINE, MALLEINE, MORVINE.—The announcement of the discovery of tuberculine, with the recommendation of its utilization as one of the most valuable of assistants in veterinary diagnosis in cases of doubtful bovine tuberculosis, is an occurrence of comparatively recent date. Opinions are still at variance, however, as to its positive value, the experiments of Dr. Arloing seeming to prove that the characteristic reaction is not always reliable, while, according to other authorities, and among them Professor Nocard, the subcutaneous injection of the substance in question has by a long series of experiments established its claim as an almost positive means of diagnosis, by the febrile reaction and elevation of temperature accompanying it.

The discovery of Professor Koch was the preliminary of others, since it was inferred that if such a product could be obtained from the culture of the bacillus of one among the contagious diseases, other and similar affections would, in all probability, be found subject to analagous laws. And it was, indeed, but shortly afterwards that the announcement was made of the claim of Hellmann and Kolning and Preusse that they had obtained from the cultures of the bacillus of glanders a special substance to which they gave the name of malleine, and for which they claim, among other properties, that of causing a rise of temperature similar to that following the inoculation of animals affected with glanders.

Professor Nocard, as shown in an article in last month's REVIEW, has given to malleine the attention which it deserves. He has experimented with it so largely, and so fully stated the conclusions he has reached, that there can no longer be any good reason alleged for ignoring its claims in cases of suspected glanders, or those in which the symptoms may be of a latent character, and have not yet arrived at the stage of manifest development. The *Archives de Medecine Experimentale* contains an article by Mr. A. Babes, of the Bacteriological Institute of Bucharest, which includes some still more important facts. He also had discovered a malleine, but as its action differs somewhat from that discovered by Hellman and Preusse, he has given it the name of *morvine.*

Without entering upon the consideration of the modes of preparation of this substance, and only for the present noticing the fact that numerous experiments have been made by the author, we present the conclusions of Mr. Babes as possessing great value in their relation to the future prophylaxy and therapeuty of glanders.

1st. The bacillus of glanders produces chemical toxic and vaccinal substances.

2d. These are obtained by precipitation in alcohol at 86°, or by saturation with the sulphate of ammonium or of magnesium, or again by precipitation in a mixture of absolute alcohol and ether, or of the filtrate of the cultures in bouillon, or of that of the emulsion of the cultures on potatoes.

3d. The method of precipitation in absolute alcohol and ether is preferable in view of the rapidity of the process, as well as of the purity of the substance thus freed of toxic ptomaine.

4th. These substances have a thermogeneous and toxic action, stronger than the tuberculine of Koch. They have a close analogy with enzymœ.

5th. They do not give rise to local reaction, though a fever occurs, more or less temporary, according to the species of the animal, and convulsions have been sometimes observed. Repeated strong doses become fatal with nephritis and marasmus. They never give rise to glanders.

6th. The action of these substances, which collectively we have called *morvine*, is more manifest in glanderous animals than in others. By regulated dosage, with the assistance of these substances, we have often succeeded in inoculating against glanders, and even—exceptionally—in curing the disease when already developed.

This last conclusion is one of immense importance, while it is true that it is based merely on the result obtained from a single animal, which, after the disease had been diagnosticated by clinical and bacteriological means, was brought to such a condition that the glanderous symptoms were no longer manifested by clinical signs. It is also to be considered that after death the anatomo-pathological and bacteriological examinations failed to show the slightest indication of a glanderous nature. Such a case certainly opens a broad field for the study of the pathologist, as well as offering new points for investigation to the sanitarian in respect to the management of an affection which to this day has been considered incurable. .

A WISE SUGGESTION.—The following circular has reached us:

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

PHILADELPHIA, August 2, 1892.

To all Members of the Pennsylvania State Veterinary Medical Association:

Through the courtesy of Secretary Thomas J. Edge, of the Board of Agriculture, the members of our Association are afforded an opportunity to appear at the various meetings of the Farmer's Institutes which are held throughout every county in the State. This opportunity is one that the officers of this Association most heartily commend to all its members. It will bring us more prominently before our people; it will strengthen our organization and it will be the means of bringing our profession to a stronger position among the other professions of our State.

We, therefore, as officers do request that every member will, on receipt of this announcement, send in his name to Secretary Ridge, offering to assist in carrying forth this project whenever he may be called upon. It is desirous that in consenting you will name the subject upon which you are willing to prepare a paper. You may be selected to go to most any portion of the State, but it is generally the plan to select a man close to the centre at which the local institute convenes.

Your traveling expenses are provided for by the Institute so selecting you. A list of those of our members willing to take up this opportunity must be placed in the hands of Secretary Edge by the 15th of this month. It is therefore absolutely necessary that we have in the Secretary's office a list of all those who are willing to take part.

By order of the officers.

W. Horace Hoskins, *President.*

W. H. Ridge, *Secretary,*
Trevose, Bucks Co., Pa.

Although this is an exclusively State matter, we can but think the example an excellent one to be followed by other commonwealths, in order that the good which may accrue to the profession in Pennsylvania may be shared by their brethren at large, and we consequently recommend it to the secretaries of veterinary associations wherever they may be flourishing.

While this exemplifies a new mode of public education in this country, it has been for many years back in vogue in Europe, and it has exercised a powerful influence in the way of educating the people to an appreciation of the value of the veterinarian to society, and the importance of the services by which the community is made his debtor. Our call is not confined to the cure of diseased animals. It covers a much broader field, and our usefulness reaches in many directions and includes many collateral matters in which our advices and experience can be of advantage to the people. Public conferences on any subject connected with animal economy, so far as veterinary duties and relations are concerned, may, if properly conducted, do much for the elevation of our profession as a body in popular estimation, and can but benefit its members individually. We hope that the call made by the President of the Pennsylvania State Veterinary Medical Association will attract general attention from our friends in the Keystone State, and that the good accomplished and entertainment afforded by the participants may induce other States to join the procession of veterinary knowledge seekers.

United States Veterinary Medical Association.—The following notice reached us at so late an hour that we scarcely find room to insert it in this issue. It is the last notice sent by the zealous and untiring Secretary, and we should consider it failing in our duty did we not call the special attention of our readers to it. The meeting in Boston will be one of great importance, and, we believe, one of the largest the Association ever had. The work which will be done at Union Hall will be one of lasting influence on the future of veterinary medicine in this country, and no member of the profession can well afford to remain away from it.

The notice reads as follows:

PHILADELPHIA, PA., August 23, 1892.

To all Members of the United States Veterinary Medical Association and the Veterinary Profession throughout the United States:

All applications for membership filed in the office with the Secretary on or before September 15th, will receive consideration at Boston on September 20th.

The Secretary desires to give notice that there will be at least ten papers, aside from the reports of Committees, for consideration at this meeting, embracing subjects of the greatest interest and importance to the entire profession.

All railroads east of Chicago, and the Chicago & Alton from Bloomington, Ill., will grant the one and one-third rates to all members attending this meeting.

The meeting will be held in Union Hall, 48 Boylston St., Boston, Mass., on September 20th, 21st and 22d. The Committee of Arrangements recommend the following hotels: Young's Hotel, U. S. Hotel, Hotel Reynolds, and the Thorndike.

A special meeting of the International Committee of Arrangements will be held at Young's Hotel, September 19th, 1892, at 4 P.M. sharp. A special meeting of the *Comitia Minora* will be held at Young's Hotel at 8 P.M. September 19th, 1892.

The banquet will be given at Young's Hotel. It will close our exercises at P.M. on the 22d. A general invitation is extended to the entire veterinary profession of the United States to be present at this meeting. By order of the Secretary.

W. HORACE HOSKINS.
12 South Thirty-seventh St., Phila., Pa.

President, R. S. Huidekoper.

ORIGINAL ARTICLES.

CONTAGIOUS PLEURO-PNEUMONIA OF THE HORSE.

A Paper read by W. L. Williams, V.S., before the Indiana Veterinary Association.

The so-called pleuro-pneumonia contagiosa of the horse as heretofore received but little attention as a distinct speci- c disease at the hands of English veterinary writers, the nly literature I have been able to find being a paper entitled, "Infectious Pneumonia of the Horse," by Dr. Fleming, ap- earing in the *Veterinary Journal*, Vol. xxxiii., p. 1.

Prof. W. Williams, in his "Principles and Practice of Veterinary Medicine," gives no recognizable description of the disease, while Prof. Robertson, in his "Equine Medicine," describes it under the head of influenza as one of its forms or types. This view of Prof. Robertson is the one generally obtaining among English veterinarians, and under the head of influenza we find grouped in an indescribable mass along with this affection epizootic catarrhal fever, epizootic cellulitis or pink-eye, with, at times, strangles and other distinct affections. A like view seems to have prevailed among veterinarians in general in continental Europe until a very recent date. In 1881, however, Dieckerhoff described this affection as a distinct specific malady under the name of influenza pectoralis, while grouped under influenza as one of its types the disease was reasonably well described as early as the third decade of the present century.

The literature consulted in the preparation of this paper, and to which indebtedness is acknowledged, is the above cited contribution from Dr. Fleming, Dieckerhoff's "Manual of Special Pathology and Therapeutics," and Friedberger and Frohner's "Special Pathology and Therapeutics." The malady is commonly known to the Germans as brustseuche or chest plague, to the French as bilious pneumonia. It is a specific contagious disease of the horse, and, so far as I can find, has been recorded in no other solipeds or other animals. The pathogenic germ has not been identified to complete satisfaction Schutz, Peterlein, Mendelsohn, Perroncito and others have found in the affected lungs spherical or oval bacteria usually as diplococci, rarely in chains, which are believed to be the essential germ. Schutz made pure cultures of th germ, which destroyed mice and produced gangrenous pneumonia. In some cases, also, he seems to have rendered horse immune by the inoculations. Lustig describes a differen micro-organism from that of Schutz, with pure cultures, o which he reports having readily induced the disease in horse which were afterward immune. Intra-venous inoculation with warm blood were followed by negative results in th hands of Dieckerhoff. The same result followed experiment nade by myself by inoculating subcutaneously with warm lood. The pulmonary and pleural exudates are generally redited with being richest in the essential germs, but the onstant and severe engorgement of the liver would suggest hat organ also as a rich breeding-ground.

The disease exists most frequently in large city stables, xtensive breeding studs, military establishments, and other laces where there are considerable aggregations of horses. n our great cities the disease becomes permanently established and domiciled, the constant influx of country horses, ot yet rendered immune, serving to maintain its uninterupted prevalence. Friedberger and Frohner hold that it ccurs mainly in horses aged five and ten years, but we can nly see in this the age at which horses are generally sent to he cities, and largely for the first time exposed. In our experience in an almost purely breeding district we observed nore cases in animals below five years than over, young foals uffering as constantly as other ages. We are led to believe, herefore, that age has no influence in the dissemination of he disease. It attacks with equal certainty all breeds, and t all seasons of the year, but, like many contagious diseases, lose confinement in crowded, ill ventilated stables, excessive eeding and extremes of labor or inactivity serve to increase the facilities for spreading and markedly heighten the mortality.

While bacteriological investigations as to the contagious nature of this disease are meager, we have clinical evidence of the highest order of its purely specific character. In large cities where, in common with this malady, cellulitis, influenza in its restricted sense, strangles and perhaps other specific equine diseases are permanently rooted, two or more of them not infrequently co-exist in the same stable, and even in the same animal, leading to confusion, and the grouping together by the various veterinary writers (mostly city practitioners) of a number of wholly distinct contagious diseases under the name of influenza. In smaller cities, however, and especially in breeding areas where extensive studs are kept well isolated from other animals, such maladies can be seen in their purity and studied to advantage, and under such surroundings each outbreak can be traced to its origin with as unerring certainty as in any contagious disease. It usually appears first in these small cities in the livery or sale stables, especially in stallion sale stables, where there are frequent arrivals of horses from long distances. From these centers it gradually spreads to smaller private stables and to breeding farms in the vicinity, the latter usually becoming infected through the bringing in of a new animal, or more frequently by means of the regular driving team of the farm, which is habitually placed in the large stables when driven to the city. Convalescent animals from city stables are frequently sent to farms for recuperation, and furnish a fertile source for dissemination. Agricultural fairs, horse shows and race meetings also afford excellent opportunities for the dissemination of this and other contagious diseases.

SYMPTOMS.—In common with other acute contagious maladies this is to be first recognized by the sudden rise of temperature, attaining in a few hours' time an elevation to usually 104° to 106°, occasionally reaching 107.5° F. or even higher. It probably offers the highest average temperature of all infectious diseases of the horse. The whole body surface and the mouth give a sense of intense heat to the touch. The pulse varies from fifty to seventy per minute in the earlier stages, increasing to one hundred and over, with the later advent of grave complications. With grave heart complications the pulse becomes rapid, weak and intermittent.

The effect upon the general nervous system is generally of a profound character from the beginning. The general consciousness seems lowered and the animal apparently suffers from headache, as evinced by hanging the head or resting it on the manger or other support. Locomotion is slow and unsteady, indicative of extreme nervous debility. As a further result of the nervous depression, the animal not infrequently lies down considerably in the earlier as well as later stages.

The visible mucous membranes are intensely injected, dark red, at times yellowish red and but slightly, if at all, vollen. The sclerotic coat of the eye attains within a few hours ter elevation of temperature a characteristic yellow, icteric ie which it retains usually for several days until the crisis reached, frequently longer, extending over a week or two.

In relation to the enormously elevated temperature the petite remains surprisingly good. In a few cases appetite is anting, but generally a fair amount of food is taken with lish. The condition of the stomach and bowels depends gely on prior diet, which, if light and laxative, prevents nerally any marked constipation or other disturbance as a sult of disease. When, however, dry nutritious food in great undance has been allowed prior to the attack, we may have the earlier stages constipation or severe gastro-intestinal mplications, evidenced by colic, and later in the disease, om the third to fifth day, profuse diarrhœa may supervene.

The urine is scant in early stages, surcharged with cretory products and bile-tinged. Later in the disease prose diuresis is not uncommon. There is usually a somewhat quent, short, hacking cough, modified somewhat by the aracter of the chest complications becoming largely supessed in painful pleuritis and pleurodynia.

There is generally no nasal discharge at the outset, but in newhat less than fifty per cent. of patients there occurs out the second to the fourth day a markedly characteris-, pathognomonic discharge, usually scant, occasionally undant, of at first a watery character, semi-transparent, le yellow or lemon color, later becoming thicker, somewhat aque, darker yellow, almost the color of egg yolk, adherent nostril where it dries to reddish brown scabs. In rare ses the discharge is abundant and continues for several ys, and when abundant usually remains thin and transpart in character, mixed somewhat with flakes.

In other cases it is rusty-colored or dark red, due to adxture of blood; in others it is lighter colored, flaky, dirty ey and fœtid. The respiration depends upon two distinct tors, temperature and chest complications. It is markedly celerated before chest complications are established and latter influences it in the same manner as ordinary pleurisy or pneumonia, thus furnishing every degree, fro moderate acceleration to fatal dyspnœa. Thoracic pain occasionally present, as shown by grunts emitted during e piration, from a sudden blow or during movements. Th pain is at times pleuritic, at others pleurodynic.

The absence of chest pain is no proof of absence of exte sive pleuritis. Dieckerhoff relates that in cases of unilater pleurisy it not infrequently happens that the affected side the thorax is tucked in and held as immovable as possibl while the opposite side is bulged out and takes upon itself i creased function, thus making the two sides of thorax unequa a condition best seen from above the animal's back.

Auscultation and percussion of the thorax, after a duratio of twelve to forty-eight hours, or longer, reveals in a larg proportion of cases more or less extensive pleuro-pulmon lesions, differing mainly in case of pulmonary lesions, fro ordinary pneumonia in the less completed hepatization, hen a less degree of dullness and greater persistence of bronchi respiration in the affected part. It not infrequently happen however, that percussion and auscultation fail to reve pneumonia, pleurisy or other thoracic lesions throughout t entire duration of the disease, a fact which renders the app lation of contagious pneumonia somewhat ambiguous.

The pneumonia and pleurisy offers a distinctive differen from the other pneumonias of the horse in that the patie generally shows a marked tendency to assume the recumbe position at frequent intervals. Few diseases of animals e hibit a greater variety of complications and sequelæ, in fa it seems that the pleuro-pulmonary lesions should be view rather as complications than otherwise, since in some ou breaks thoracic complications become almost the exceptio rather than the rule.

The symptoms we have noted as being constant are t high temperature, great depression and engorgement of t liver, as evidenced by the early and well-marked icter Following upon the common thoracic lesions we occasional find hydrothorax, pyothorax, pleuritic adhesions, suppuratin chronic and encysted pneumonia, which add to other sym ms their individual characteristics which it is unnecessary detail here. The peri- and endocardium are occasionally in- lved in the general inflammation of the thoracic organs, and quently we have the more grave lesion of myocarditis th rapid, weak, intermittent pulse. Profuse diuresis occurs mewhat rarely after several days' duration of the disease.

A quite common sequel, usually after the crisis and during parent convalescence, is the appearance of the so-called eumatic inflammation of the sheaths of flexor tendons in tacarpal and metatarsal regions, and sometimes of the novial membranes of the elbow, stifle, and at times other nts.

The patient's temperature has been normal, or about so, petite good, appearance bright, and every indication of nvalescence is present when suddenly it becomes excessive- lame, refusing in many cases to put the affected member the ground; if a sheath of flexor tendon is the seat of ection it swells rapidly, the parts become tense, hot, very inful to touch; when deep-seated joints are affected the jective signs are less manifest or absent.

When more than one limb is affected the animal remains cumbent most of the time, resulting in the early appearance extensive bed-sores. The whole system becomes fever- again upon the appearance of severe lameness, and less promptly relieved, rapid emaciation ensues. I ve not noted suppuration of the affected parts, neither does inflammation shift from one limb or part of limb to an- ier, and after recovery I have not seen recurrence of the neness. These facts lead me to believe it embolic, and not eumatic as most veterinarians urge. Diffuse spinal menin- is occurs rarely at about the same stage of the disease as so-called rheumatic inflammations, and presents symp- ns offering no distinctive features from ordinary menin- is.

Dieckerhoff mentions in addition to the above sequelæ and nplications, spinal paralysis, due to specific inflammations aponeuroses of loins and hips, or diffuse infiltration of spinal pia mater, pulmonary hemorrhage, inter-pleural

hemorrhage, hemorrhages into urinary apparatus, erysipel
tous inflammations of extremities, and coincident infectio
with other contagious diseases; also ichorous pneumoni
relapsing pleuritis, suppurating pleuritis, pleuritis after p
monary gangrene or ulceration, empyemia, specific ophthalm
and roaring.

The course of this disease and its duration necessarily d
pends much upon the varying complication, but it may
stated as a rule that the cardinal symptoms of the diseas
when not prolonged by the occurrence of a grave complicatio
generally disappear in from six to ten days, the temperatu
becoming normal, the extreme nervous prostration disappea
ing, and the icteric hue of the sclerotica vanishes, indicati
the resumption of normal hepatic functions. Some cases pu
sue an apparently abortive course, and convalesence occu
from the third to the fifth day.

Extensive pneumonia necessarily prolongs the diseas
delaying convalesence eight to twenty days after the begi
ning of the pulmonary complication, or, becoming chronic, ma
extend the disease over several weeks or months, eventual
leaving the animal more or less incompletely recovere
Hydrothorax may run a brief or chronic course. Pyothor
usually leads to early death, so also empyemia, meningit
pulmonary gangrene and ichorous pneumonia. Severe m
ocarditis with intermittent pulse generally terminates fatal
at the third to sixth day.

The symptoms, complications and sequelæ already en
merated, indicate to a great extent the character of patholo
ical lesions as revealed by post-mortem examination. Follo
ing as closely as practicable their universality and importan
we find: first, a well marked enlargement of the liver, increasi
its size very considerably. Its weight ranges from twenty
thirty pounds, is usually of a markedly yellow hue, the su
face smooth and glossy, the capsule tense, apparently to t
point of rupture, the parenchyma friable. In conformity wi
this condition, the entire cadaver is more or less deeply ting
with bile. The lungs show in most cases more or less exte
sive pneumonia, at first lobular in character, in more seve

ises its lobular features to some extent disappearing. The
epatization does not attain that completeness and solidity
oserved in other pneumonias, but the most solid parts fre-
iently remain to a small extent permeable. In rare cases
e found gangrenous spathes, hemorrhagic infarctions, suppu-
tion.

The pleurisy of this affection offers especially the icteric
ie of the inter-pleural exudates, and in general a want of
lhesive bands between the two pleural layers. The peri- epi-
id endocarditis offer but little of special interest. The
uscular tissue of the heart is usually pale, flabby and friable,
ith, in severe cases, well marked hemorrhagic spots through-
it the entire organ. The enteric complications offer after
arrhœa a diffuse muco-enteritis. The kidneys are pale-
llowish and friable, the pelvis occasionally containing a con-
lerable quantity of thick, mucus pus. Other pathological
sions have perhaps been sufficiently indicated in our descrip-
on of symptoms.

The diagnosis, as in many contagious diseases, may prove
ficult in isolated cases, that is, in the initial cases in a
ighborhood where a history of exposure is wanting. The
ief reliance must be placed upon the sudden elevation of
nperature without other explanation than infection, the
ofound nervous depression, and chief of all, the well marked
indice as exhibited most clearly in the sclerotic coat of the
eball. When nasal discharge is present its character is
thognomonic. The pneumonia of this disease differs widely
m other pneumonias, in that the animal frequently assumes
recumbent position, and also an extension of the lung
ions may occur to an extent incompatible with life in the
linary affection, and the animal retain a vigor which does
t presage a fatal termination.

The prognosis depends almost entirely upon the compli-
ions. The temperature gives no indication of the probable
ie. The pneumonia, even when affecting both lungs to an
ent necessarily fatal in other pneumonias, is by no means a
ecursor of death in this affection, owing evidently to the
s complete hepatization attained. Even when both lungs

are involved throughout their lower two-thirds or three fourths, while the outlook becomes very grave, a fatal issu is uncertain. The same may be said of pleurisy and hydrothorax.

Increasing jaundice with prostration and inappetence lend gravity to the case. Diarrhœa, when not too severe, apparentl has a beneficial influence on the termination of the disease The same may be true of profuse diuresis. Peri- and end cardial complications possess their usual danger, and my carditis, when sufficient to produce intermittency, is, so far a we have observed, fatal. Meningitis is nearly always fatal Pyothorax, empyemia and pulmonary gangrene are fatal.

The amount, presence or absenee of nasal discharg possesses no prognostic value. The quality of the discharg may assist in leading to a safe conjecture of the result. rust-colored ichorous discharge indicates generally a fat issue, but a dark red or black (hemorrhagic) discharge with out very marked fœtor, which presages death in ordinar pneumonia, while very grave, is not necessarily fatal in thi affection. The inflammations of sheaths of flexor tendons an synovial membranes of joints sometimes recover promptl more often require two or three months or even longer f the disappearance of the lameness and thickening. When th synovial bursæ of joints, such as the elbow and stifle becom affected, recovery is slow and uncertain. Some recover two or three months, while others remain permanently lam

In case of two heavy draft mares coming under my car affected in both the elbow joints and flexor tendon sheat both remained recumbent so much of their time for five six months, that in their emaciated condition they becam covered with large and deep bed-sores. They both finall improved slowly, and one, after one year, the other after tw years, began breeding again and recovered their general healt but remained slightly lame. After recovery these affectio of joints and tendon sheaths, do not, in my experience, recu A brief history of four fatal cases of this malady may be interest.

No. I. A well bred roadster gelding, age four yea veight about one thousand pounds, was noticed dull, with oss of appetite for a few hours only before examination. emperature, 104° Fahr.; pulse, about sixty per minute; ody surface hot; sclerotic coat of eye intensely yellow; isible mucous membranes injected and yellow; animal moved ardily as if weak, and lay down frequently and rested quietly on ternum; there was a short, partly suppressed, hacking cough; ercussion of the chest showed all parts equally resonant, but ppeared abnormally dull; auscultation revealed vesicular urmur in every part, with no sound characteristic of pneuonia, no pleural friction sound present, breathing slightly ccelerated. Quinine in large doses produced no impression n the temperature, neither could any effects be noted from he use of alcoholic or ammoniacal stimulants, the animal ppearing about the same as above recorded for a week, her reathing gradually becoming worse, but the chest still resnant alike all over, no evidence of thoracic pain, and the nimal continued to assume the recumbent position a large art of the time. Death ensued about the eighth day. Auopsy showed universal pleuritis with enormous exudate of loody serum, thickly mixed with fibrinous clots. The hydrohorax had been distributed over the entire pleural surface. he lungs were normal, except the slight collapse seen at lower order, the result of pressure from the hydrothorax. Heart nd its coverings normal, heart contained a clot of fibrin. Liver reatly enlarged, estimated weight thirty pounds, bright yelow in color, the capsule smooth, shining, tense. The tissues f entire body tinged with yellow, otherwise healthy, except s detailed above.

No. 2. A four-year roadster mare of about eleven hundred ounds weight, belonging to the same owner and kept in table with the above. Sickened about ten days after death f preceding; temperature, 106°; pulse, 60; appetite diminished ut fair; breathing considerably quickened, pulmonary lesions ronounced. Treatment produced no visible effect on the ourse of disease, and at about the fourth day profuse diuresis et in, without diuretics having been administered, after hich she rapidly failed and died two days later.

Autopsy.—Pleura normal, except one old adhesive band. Lungs inflamed throughout their entire extent, the right in gray stage, the left in red hepatization, all parts being imperfectly hepatized, and permeable, to a slight extent, to air. No gangrene. Liver enlarged, yellow, and presenting same general characteristics as above, but in less intense degree. Kidneys enlarged, hilus containing muco-purulent matter; spleen enlarged, remaining viscera normal.

No. 3. A three-year imported French draft mare, showed at outset the essential symptoms already described, the jaundice being especially notable. About second day of disease heart complications of a grave character were noted, the pulse being unequal and intermittent. The heart was stimulated with f. e. digitalis gtt. xv. every thirty minutes until action became regular, when doses were given less frequently, barely sufficient to maintain moderate regularity. To relieve the jaundice there was given aloes ʒi, hydrarg. chlor. mite. grs. xv., hydrarg. chlor. corrosiv. grs. ii., in pills twice daily for two days. The icteric hue of sclerotica promptly disappeared. Mare succumbed from heart failure the fifth day. Autopsy.—Pleural normal, lungs very slightly inflamed. Peri- and endocardium markedly inflamed. The muscular tissue of the heart was highly inflamed, soft and friable. Liver normal in appearance and size, apparently the result of hepatic stimulants administered.

The above were three fatal cases out of ten animals affected in a stable at Bloomington, Ill., where all were closely confined and highly fed to fatten for a public sale. The autopsy on No. 1 was made jointly by my partner, Dr. Alverson, and myself; the other two by Dr. Alverson, to whom I am indebted for the notes on all.

No. 4. An eight-year roadster, property of Dr. R——— Lafayette, Ind., had been sick some time without material loss of appetite, but showed considerable cough. The owner administered an aloetic purge which was followed by superpurgation lasting two days. A day later I was called, and arrived at the stable barely in time to see the patient fall dead. The cadaver was removed to the dissecting room at Purdue,

niversity, and an autopsy held. Right costal, visceral and
aphragmatic pleura much inflamed, with some serous exu-
te mixed with flocculent lypmph; costal pleura at one
int showing a circular elevation eight inches in diameter,
d one-eighth inch above surrounding pleura, a firm, lymph-
e extravasation of a transparent, yellowish hue. The
wels showed severe general muco-enteritis, probably caused
the aloetic ball, and doubtless the immediate cause of
ath. The liver was swollen, the capsule tense, shining,
le yellow in color, and weighing twenty-one pounds.

No. 5. Called May 11th, 1892, in consultation with Dr.
. E. Knowles, at Terre Haute, Ind., to attend the three-year-
d sorrel colt Electral, a highly bred pacer. Patient had
en well up to May 6th, and was one of the last of a large
ble of track horses to take the disease; had been very bad
m first with rapid, weak, intermittent pulse, which gradu-
y grew worse. At date of visit had an excessively fœtid
sal discharge, considerable in amount, dirty reddish in
lor, thin and mixed with flakes. He died at 4 A.M. the fol-
ving day, and autopsy conducted by Dr. Knowles and my-
f at 10 A.M. Subcutaneous aponeurosis bile tinged, axillary
ins filled with extremely black, feebly coagulable blood,
scular interstices show numerous ecchymoses. Diaphrag-
tic and costal pleuræ inflamed throughout, pleural cavity
ntaining one quart dark yellowish brown, flaky exudate,
nchial glands enlarged. Right lung showing lobular
eumonia with imperfect hepatization at various points, and
ght inflammation throughout entire extent, slight emphy-
na at upper border; left lung shows but little pleurisy, but
merous small lobules markedly inflamed. The pericardium
s slightly inflamed; endocardium intensely inflamed, show-
hemorrhagic infarctions; heart muscle pale, soft, friable,
l showing ecchymosis. Stomach filled with deeply bile-
ged food, mucous membrane congested, mucous membrane
colon and cœcum inflamed; liver pale yellow, tumefied,
sule tense, shining, weight twenty pounds; kidneys hy-
æmic, pus in hilus of left.

The mortality and loss varies greatly in different outbreaks; in some the mortality falls to one per cent. or below, and the loss amounts practically to the loss of use of patient for three or four weeks' trouble and expense of treatment, etc., while in other cases the mortality mounts up to thirty per cent. or over. Seasons, heat and cold or age of animal appear to exert no influence on the mortality, but damp, changeable weather, which would naturally predispose to chest diseases, aggravate these complications. Thinness of flesh seems without prejudice, but excessive fatness, with high feed and scant exercise at date of invasion, is exceedingly baneful. Ordinary working animals, if promptly rested when attacked, withstand the disease best. On an average the mortality in the country and small cities may be placed at five per cent. or less with safety. In large cities with crowded stables it is evidently greater, Dieckerhoff estimating the mortality at fifteen per cent. in Berlin, while Friedberger and Frohner place the mortality at twenty per cent to naught per cent.—usually at three and eight per cent. At all events, it may be said to be the most fatal of the class of diseases of the horse generally grouped together as having the type of influenza.

The period of incubation is not accurately determined, and is certainly not uniform. I have seen the disease appear as early as nine days, and as late as twenty days after exposure What contact is necessary for transmission is also unknown most cases being evidently due to intimate associations of healthy with diseased animals. Quite frequently in large stables an animal several stalls distant from the diseased one will contract the malady, while those in intervening stalls remain free. Usually part of the horses in a stable escape sometimes as high as thirty to fifty per cent. resist its encroachments. Like most epizootic diseases it generally diminishes in virulence after existing for several months in a locality and finally disappears. It spreads slowly, and can probably be transmitted by the air for a short distance only In one case two draft stallions, occupying a stable by themselves, contracted the malady, and both died, while the other horses of the farm, scarcely a hundred yards distant, remained ealthy. No records have been found of a second attack in he same animal.

The treatment has been one of uncertainty and of conflictng ideas. Dieckerhoff very properly remarks that lowering f the temperature is not essential, and also that cinchonidia, arbolic acid, salicylic acid, salicylate of soda, preparations f iodine, hyposulphite of soda, etc., are impotent as febriuges in these cases. He recommends internally sod. bicarb. 5 and 120 grammes, with cort. querc. 40 and 60 grammes; lso sod. or magn. sulph. in doses of 300 and 500 grammes; in ther individual cases calomel in 2 and 3 gramme doses. For he pleuro-pneumonia he commends sinapisms, oil of mustard r croton oil with turpentine. In later stages he commends warm fomentations and poultices to the chest. For heart omplications, he commends camphor, digitalis and valerian; iuretics he condemns. When suppurating pneumonia is hreatened he recommends setons in the breast, and when yothorax is evident he advises scarification of pleura by means of a trocar. For hydrothorax he advises the trocar.

Friedberger and Frohner likewise hold the control of temerature unnecessary unless in exceptional instances, when hey commend phenacetin, antifebrin, antipyrin, digitalis, alohol, ether and camphor; as heart stimulants, caffein, hyocin and atropine subcutaneously. Like Dieckerhoff, they ommend vesicants in chest complications; for hydrothorax, igitalis, alkalies, juniper berries, potassium acetate, and esecially pilocarpine in doses of $\frac{1}{10}$ and $\frac{2}{10}$ grammes. For seere intestinal lesions they commend small doses of calomel 1.0 and 4.0 grammes), and for threatened lung abscess, inhaltions of creolin, carbolic acid, turpentine, etc. Dr. Fleming trongly advises the administration of quinine, and in cases f threatened lung abscess or gangrene, carbolic acid.

All are agreed that proper hygienic conditions are of the rst importance, the housing—if the habit of animal or kind f weather indicates housing at all—should be dry, comfortale, well ventilated. The food should be laxative, preferably reen food, roots and bran. The control of the temperature useless. I have seen cases with temperature of 104° to

105° go through the entire course of the malady withou medicine, and do well. In one case I recall a newly imported French draft stallion with a temperature of 107.5° F. fo a week going entirely without medicine, fed moderately during the entire time, and made a prompt and complete recovery. Quinine will not, as a rule, lower the temperature, even in very large doses. Phenacetin, acetanilid, etc., in full ounce doses, bring temperature down to near the normal, but only temporarily, and apparently exert no lasting beneficial effect The effects of alcoholic stimulants are not readily discernible

Why the enormously engorged and passive liver shoul be so completely ignored in the therapeutics of this malady is more than I can understand. The icterus is certainly th most constant symptom during the life of the animal, and hepatic engorgement the most complete lesion found on autopsy. To the end of relieving this condition I have used in a few of our most recent cases, with apparent benefit aloes ʒi, calomel grs. xv, and corrosive sublimate grs. ii, in pill twice daily for two days, or until bowels respond or icterus diminishes. Other hepatic stimulants can doubtless b used with equal promise, or possibly would prove even better, such as podophyllin, muriatic acid, etc. In lung and pleural complications in our experience, vesicants to sides o thorax rarely do good, but frequently do harm by causing th animal great agony and consequent restlessness.

Hot fomentations, poultices, or a mild stimulating or anodyne liniment well rubbed into chest and covered with woolen blanket, has, in our hands, proven equally serviceable and less dangerous. In hydrothorax 1 and 1½ grs. pilocarpin hydrochlor. hypodermically, seems of special value This failing, the trocar should be resorted to. In other cases where no applications are made to the chest, the animals appear to do fully as well. In inflamed tendons, sheaths and synovial bursæ, we have found best results in earlier stages from the application of a mild liniment, with aconite and chloroform as essentials; later, stimulants or vesicant applications may be made with benefit.

The prevention of the spread and the extirpation of this lisease should be undertaken on those lines applicable to conagious diseases in general. When the disease is recognized n a stable, the affected animals should be promptly removed, nd the stable thoroughly disinfected, close watching being naintained for new cases. Thorough ventilation tends to lesen the virulence of the contagion. Public stables where the lisease exists should be thoroughly disinfected, and diseased nimals properly isolated, or the stable closed to transient nimals. Careful feeding on light laxative diet, with light vork or exercise, taking especial care not to work the animal fter the development of the disease, will do much to modify he severity of the attack. Convalescents should not be alowed to mingle with unexposed animals until after five or ix weeks, and not even then should traces of the disease renain manifest. Animals known to have been recently exosed to the disease should not be allowed in close contact vith other horses at fairs, horse shows, race meetings, and t other places where large numbers of horses congregate. Vhen the disease breaks out at such places, the affected aninals should be isolated as carefully as possible, and the exosed animals closely watched. Its control by protective inculation has been attempted, but so far without being renered practicable, although, as would be expected, a degree f immunity has apparently been attained.

REPORTS OF CASES.

RESULTS OF THE OPERATION FOR ROARING.

By C. H. Pierce, V.S., and J. S. Butler, V.S., Minneapolis, Minn.

The gelding G.B., with a record of 2.20¼, the property of I. N. Seelye, Esq., of this city, that we operated on January th last for the cure of roaring, started in his first race here n July 4th in the 2.21 class and won the race in three straight eats in 2.24½, 2.21¼, 2.21, without roaring or being distressed, nd although short of work owing to the wet season.

He started again on the 7th in the "Free-for-all trot," and ot second money, driving Phœbe Wilkes out in the second heat in 2.20¼, but could have won the race if they had not been afraid of lowering his mark. He is at present trotting in the Montana Circuit.

We operated on St. Omar (a running horse by St. Blaise, dam Olitippa, by Leamington) on June 30th; he was a bad roarer, making quite a noise while walking. He can trot and gallop slowly now without making a sound, and is, to all appearances, O.K.

EXPERIMENTAL PATHOLOGY.

EXPERIMENTAL OBSERVATIONS ON THE LIGATURE OF THE HEPATIC ARTERY.

By N. de Dominicis.

The ligature of the hepatic artery would necessarily be mortal; it stops the glycogenic function of the liver (Arthand and Butte). The author renews the experiments He observes that all animals subjected to the ligature of this vessel, with or without biliary fistula, live perfectly well They eat, and digest well, and get fat. In a few, and only in the first days after the operation, sugar is found in the urine after the ligation of the artery, a supplementary, anastamotic circulation is formed by branches of the coronary, mesenteric mammary, epigastric, phrenic, spermatic, etc. The blood of the portal vein is, however, sufficient for the nutrition and the function of the organ.—*Rev. des. Sc. Med.*

ANATOMICAL CHANGES FOLLOWING THE REMOVAL OF THE PANCREAS IN DOGS.

By G. Boccardi.

The author has investigated subjects killed from the second, third, fourth, fifth and ninth days after the operation to two months and a half. In the ten dogs upon which he performed the operation, he observed: 1st, constant loss of flesh, more or less marked, even when the animals received an abundant diet; 3d, slight microscopical alterations in the digestive canal; only a more or less marked anæmia; a edema of the subcutaneous coat, with dilatation of the ymphatic vessels; and in some cases, vascular alterations. No atrophy of glands, or increased activity of these organs salivary, buccal, œsophageal or gastric, of Brunner). The lands of Lieberkuhn, in one third of the cases, were hyperrophied in the duœdenum; but this condition, according to Martinotti, is always present. But it has no part with the oss of the glycolytic function of the pancreas, as the animal emains glycoturic.

The liver is always altered, with fatty degeneration. The hepatic cells are altered, their protoplasm is reticulated, nd in old cases, the atrophy is well marked. The kidneys are ormal, sometimes there are cortical lesions. The special welling of the epithelium of the tubes of Henli, mentioned y Armanni, and seen by Pirenti, were not observed by the uthor.

The central nervous system presents interesting alterions. After from seven to twenty days, there are varying nsystematical lesions of the pyramidal and of the origin of he posterior roots. The alterations of the grey substance re more marked, consisting in cellular atrophy, or degenertions in the anterior and posterior corunæ, with small emorrhagic centers around the central canal; and with hat, in some cases, syromyelitis of the lumbar segments, and liomatosis of the dorsal. The cœliac ganglion presents trophic cells.—*Rev. des. Sc. Med.*

OSITIVE INOCULATION OF TUBERCULOSIS WITH THE FŒCAL MATTER OF PHTHISIC.

By Solles.

1st. Solles inoculated two guinea-pigs with the testicular uice and the sperm of a phthisical individual. In the first nimal, the inoculations made with the testicular juice gave egative results; in the second, inoculated with the sperm aken from the vesicula seminalis of a phthisical man, he bserved the following lesions:

The center of inoculation had become enormous, and the ganglions of the axilla were almost in the full caseous evolution. The spleen, liver, and hypertrophied lungs were filled with miliary points; at the base of the heart and the hilus of the liver were seen true lymphatic ,glands, of new formation.

2d. Solles also inoculated six healthy guinea-pigs with fœcal matter, containing numerous bacilli of Koch, which he obtained from a patient suffering with pulmonary lesions, but without enteritis. In two pigs the inoculations were made with matter diluted in phenic acid, at twenty-five per cent. In these the infection did not take place, only a small indurated point appearing at the place of inoculation, which after acting as a local tuberculosis, disappeared. It is probable that if the phenic acid did not destroy the bacilli, it interfered with its germinative power.

Two other pigs were inoculated with the matter diluted in boiled water, and warmed to 65° C. In these cases the results were also negative, showing neither local nor general infection. The last two received inoculations of the fœcal matter simply diluted in sterilized water, and the result was positive, the liver, spleen, lungs, etc., presenting unmistakable lesions of tuberculosis.—*Rev. des. S. M.*

TUBURCULOUS INOCULATION IN THE DOG.

By Hericourt and Richet.

In experimenting upon various animals, and especially upon monkeys, it has been possible to protect them against human, by an inoculation of aviar tuberculosis. But these attempts were more successful upon dogs, which are nearly refractory to the latter, but very susceptible to the first; inoculation is then evident. Indeed, two dogs which had about two months before received intra-venous injections of aviar culture, having been inoculated by injection through the saphena of human tuberculous culture,lived and remained healthy four months after, while the other dogs, inoculated with the same culture, but without anterior aviar injection, died in twenty days. This gives a hope that among the various tuberculous bacilli may be found varities which will bring on inoculation.—*Rev. des S. M.*

EXTRACTS FROM FOREIGN PERIODICALS.

(Translated from German Papers by Richard Middleton, D.V.S., Philadelphia, Pa.)

VALUE OF MALLEINE.

From the results of our experiments we consider it impos-ible to successfully refute the statement concerning the pecific action of malleine upon horses affected with glanders. Though administered to healthy horses and to others afflicted with diseases other than glanders, these failed to manifest an advance in the temperature.

Before entering more minutely upon a description of the ymptoms provoked by injections of the virus in glanderous equidæ, we wish to state, respecting the reaction of tempera-ure, that we have only taken notice of increase of at least 1° C., when making up the several tables given in our experiments. Besides the augmentation of the body temperature following he inoculations, the afflicted horses evinced decreased cere-ral activity, together with accelerated pulse and respiration. A few horses exhibited faintness after the treatment, and a more or less complete loss of appetite. The alterations which appeared upon the point of insertion of the needle were unusually variable. In most of the cases there formed n inflammatory swelling the size of a hen's egg, which in the ollowing days disappeared.

In other cases the local reaction of the virus upon gland-rous animals seemed more prominent (since malleine is an in-onstant preparation respecting its chemical composition, the ariations here noted may be referable to this fact). The rinciple clinical symptom, the fever, as we have repeatedly mphasized, happens in glanderous horses immediately after he injection. An apparent exception to this rule was seen in No. VIII., which we treated three times with malleine, and hich gave the fever reaction only after the third injection.

Upon section of this animal we discovered an old gland-rous nodule in the lungs. The experiment of inoculating a uinea-pig with this nodule gave a negative result; since, however, in the majority of cases where such old nodules have been used in confirming the disease, the result has been unsatisfactory, we can attach no importance to this instance, which rather proves, than otherwise, the rule.

Again, in horses Nos. XXXI. and XXXV., the variation after the administration of the virus was not as expected, though the increase actually happened, yet it was within the limit of normal variation. All other horses used in these experiments gave positive results.

The interim between the injection and the appearance of the rise in the temperature, in no two cases was precisely the same. In one case of acute cuticular glanders the afflicted horse manifested the change within four hours after the application of the glanders lymph, while in another patient suffering pulmonary glanders the change was first visible twenty hours later. On an average, however, we may expect the augmentation nine and one-half hours after the introduction of malleine.

This discrepancy may have been due to the variable quantity of the active principle present in the lymph injected. The duration of the elevation we determined to be more constant, reaching its maximum in from six to four hours and thereafter gradually declining. The operation of malleine is analogous to that of taberculin, in that the structure acted upon is immediately adjacent to the nodules, or it is the nodule itself. The red zone surrounding the pulmonary and splenic nodules, as shown by post mortem, is due to the inflammatory effect of the malleine.

In one case, No. VII., the ulcerous wounds upon the pituitary mucous membrane diminished in size, but in other cases where no visible glanderous symptom was evident, the same appeared in a few days.

In closing our report we desire to offer a few suggestions upon the practical application of malleine injections. The dose is dependent upon the degree of concentration of the lymph; on account of the changeable composition of the lymph it seems advisable to first try small quantities—℈ss—upon a known glanderous horse, afterward regulating the dose accordingly.

When possible, it is better to note the temperature previous to the inoculation; this is, however, not indispensable, ince we cannot tell, exactly, the limits of normal variation. An absolute necessity is the recording of the deviation after he administration of the malleine to animals having pyrexia. Two hours after the injection the temperature should be aken and must be regularly continued thereafter for twenty hours; if for any reason the record cannot commence just as here prescribed, then the variation from the tenth to the sixteenth hour may be assumed as of capital importance. For he confirmation of glanders when occult, two inoculations are made necessary, and, indeed, should there be the least doubt after the second injection, the third must be made, using one half as much more malleine for this as for the irst two administrations—this increase in dose is warranted on the supposition that the bacillus becomes inured to the nfluence of the virus. The immense value of malleine as a diagnostic agent, applicable to the developement and discovery of occult glanders, must be apparent, from these trials, to every thinking member of the profession. The destruction of all suspiciously afflicted animals no longer becomes a necessity in large stables. In malleine we have the hope of ultimately annihilating glanders by extinguishing it in its ncipiency. Sanitary police has this year chronicled that which previous generations have conscientiously striven to accomplish for years.—*Berliner Wochenschrift.*

TOXIC EFFECT OF BEE-STINGS UPON HORSES.

Two horses were halted in the vicinity of an apiary, which or some unknown reason became the settling-ground for thousands of bees, which inflicted innumerable stings. The renzied animals could not be approached, and as a result they continued to be the object upon which the multitude of small insects vented their wrath. After repeated attempts to detract their attention from their victims, we inally succeeded by throwing buckets of water upon them, and cutting the traces of the harness.

The first horse exhibited a much swollen head of a ridiculous and irregular appearance. The whole region adjacent to the sacral vertebræ was occluded by large swellings. From the nose and mouth there flowed a blood-colored discharge. Respiration difficult and noisy, pulse small, nearly imperceptible and numbering one hundred beats per minute. The patient continued to show irrational symptoms, through the violence of which he fell many times to the ground. One hour after, the animal was utterly unable to stand upon the feet. Rectal temperature registered 104.3°Fahr.; breathing continued dyspnoeic. The blood as drawn from the jugular vein possessed a cherry brown color. After five hours death relieved the intense sufferings.

In the second horse the symptoms were less aggravated and pain less intense. Eight hours later the tumors had, to a small extent, increased in size, but the sedative effect upon the heart had somewhat subsided. In this case bloody discharge from the nose and mouth was also recorded, as well as small quantities of bloody urine. This patient succumbed fifteen hours after the attack.

Upon post mortem numerous dark spots were observed upon the under side of the skin, varying in size from $\frac{1}{6}$ to $\frac{2}{3}$ of an inch in diameter. The subcutis was infiltrated with a yellowish brown gelatinous substance, which coloring also penetrated the superficial muscular layer. Those muscles lying directly beneath the latter, however, were very pale, resembling those parts in horses having died of hæmoglobinuria. On the head, anus, and vulva the subcutis varied from a dark brown to a black hue, and from here, as from the connective tissue of the subcutis in general there escaped a bloody serum. Especially in the second horse these regions exhibited a gangrenous appearance. Among the abdominal organs the spleen seemed most to suffer a change; the pulp of this organ was double its physiological dimensions, rendering one liable to mistake the same for anthrax; the spleen was much harder in consistence than in anthrax; kidneys somewhat enlarged and hyperæmic; the mucous membrane lining the pelvis of the organ in the same condition. In one patient he stomachic membrane diffusely reddened, and in the ab-ominal cavity about a quart of reddish serum. A portion of he pleura in this animal discolored, and a portion injested. n the pleural cavity a liter of reddish serum, and upon the embrane covering the lungs, dark brown spots of diminu-ive size. Upon transverse section of the lungs these spots ere also visible, and were of the nature of hæmorrhagic in-rctions. Both surfaces of the pericardium were reddened nd opaque. External and internal surface of the heart dis-olored by extensive ecchymoses.

Pia mater intensely red, and vessels ramifying beneath some-hat congested. From one and a half to two drachms of loody serum was secured from the ventricles; considerable f this same fluid escaped the occipital foramen upon ecapitation. Very few blood corpuscles found in the urine.

According to Frohner, the poisonous substance of the oney bee is constituted by a mixture of formic acid and a oisonous ptomaine. Acetic acid, which is closely allied formic acid, induces symptoms similar to those just numerated—Frohner obtained this result with acetic acid jections in a goat. Acetic acid, when incorporated with the lood, produces hæmoglobinuria. On the other hand, some the symptoms recorded seem to indicate their source as tomainic.—*Monatsh. f. Thierheilk.*

DIABETES IN THE DOG.

The literature of veterinary science has recorded diabetes ly in horses, cattle. dogs, cats and monkeys.

Frohner has personally had the opportunity, within the st decade, to note five cases of diabetes mellitus in the dog. he last two of these were seen in November of last year, and ere brought to the Berlin polyclinic for small animals, at-ched to the Royal University of Prussia.

The first dog, a small six and a half-year-old poodle, had own abundant urination a period of four months back, and d in spite of inordinate consumption of food, continued to naciate; at the same time the patient experienced great thirst.

According to the history, these symptoms were observed for some time previous to the failing sight, which determined the owner in bringing the animal to the hospital.

As a result of his examination, Frohner makes the following report: dog exceedingly emaciated, the more prominent portions of his osteology protruding; visible mucous membranes anæmic and of a whitish-yellow hue; rectal temperature 102.5° F., pulse 120-140, irregular and weak; action of the heart strong, but insufficiency indicated by the rushing sound subsequent to the first heart-note. During the days immediately after admission, the appetite poor but soon returned On an average two quarts of liquid—water or milk—were consumed each day. Large quantities of pale straw-colored urine escaped the patient; the odor of the same was not unlike chloroform, of acid reaction, and, as evidenced by the tongue, possessing more or less saccharine matter. Specific gravity, 1055. Fehling's test and the polariscope indicated the amount of grape sugar to be 4.9 per cent.

Gait of animal sluggish. In each eye the lens of a gray tint, which upon closer investigation emanated from radiating bars of opacity (cataracta diabetica). After a few days the appetite diminished, and later totally disappeared; masses of disgusting food and water were irregularly vomited. As the meat diet was persevered in, the quantity of sugar in the urine contracted. Desuetude became notably stronger from day to day, and the subject finally entered a state of insensibility (coma diabeticum) during which the rectal temperature sank below normal. Death came two days later while in a comatose state.

The post-mortem revealed intense hypertrophy and discoloration of the liver. This organ, as exhibited by the microscope, was infiltrated to a well-marked degree with fat globules. Besides these lesions, the kidneys were the seat of a slight parenchymatous inflammation; the stomach and intestines were in a catarrhal condition. In the heart he located a long-standing insufficiency of the mitralis and bicuspidalis valves. On the remaining organs, especially of the abdominal cavity, inclusive of the sympatheticus and its branches, no alteration of note could be registered.

The result of an analysis undertaken immediately subseuent to the animal's demise, the single organs contained the ollowing percentage of sugar: Liver, 0.10. Kidneys, 0.013. uscles, 0.0066. Bile, 0.023. Blood, 0.06. Brain and spinal ord, 0.02.

The latest case of diabetes mellitus determined by Frohner as in a thirteen-year-old male skye terrier, which, according the owner, had passed abundant urine for three weeks, and ad throughout this period continued to progressively emaate, grow listless and to suffer from diarrhœa. The stomach tained no food, and eating materially depressed the patient. he examination, as described by Frohner, found the animal in badly nourished condition, schneiderian and stomatic muous membranes pale; rectal temperature, 98.9° F.; pulse, o, small and wiry. Consumption of solids small, but large antities of water taken. Palpation of the posterior body, bject manifested tenderness of the epigastric region and largement of the liver. Feces thin in consistence, foamy d very offensive. Urine pale yellow color, containing bumen and 3.9 per cent. of grape sugar. Animal disinclined move; cloudiness in each eye, with well defined radiating acity. A small abscess upon the cornea of the left eye is marked. During the following night the patient died, but e owner declined to permit a post-mortem to be held.

According to Frohner, the frequency of this disease is not eat, and may be limited to one in every ten thousand anials admitted to the hospital. The symptoms of diabetes in nidæ are precisely similar to those in man, with the exception at in the human patient the course is slower and less fatal. f the two cases just described, the post-mortem is specially markable, in that the liver was almost exclusively the only gan pathologically altered. From the intensity of the hetic disease we are led to assign more or less of a relation and pendence of diabetes mellitus upon a deranged liver.—*Ber Th. Wochensch.*

SARCOMA IN EQUIDÆ.

On the nineteenth of January, a small, hard and painful elling appeared upon the off side of a draught-horse, between the eighth and ninth ribs. This at first was the size of an egg, but in three weeks' time it had assumed startling dimensions, approaching in size a child's head. The general health of the animal was in no way influenced thereby. Pain increased upon pressure over the thoracic region, and considerable œdematous swelling increased the girth of the patient by settling along the sternum. The swelling upon extirpation weighed three pounds, and contained in the center, surrounded by a tenacious connective tissue capsule, a collection of suppurative products. After the lapse of six weeks, the surface formerly covered by the tumor had become much smaller, and upon the circumference of the same small globules or growths of granular tissue commenced to flourish.

The animal was killed as useless, and upon the post-mortem, ragged collections were discovered upon the peritoneum and upon the pleura; adhesions between the diaphragm, liver and omentum were also visible. Microscopic examination of this growth exhibited its malignant character.—*Ztsch. f. Vet. Kunde.*

INTERNAL HEMORRHAGE OF THE AORTA.

A horse that had been bought four days previous, was, together with an another, hitched and used for hauling wood from the forest. The animal slackened his pace after going a short distance, and soon declined from sheer weakness to aid in drawing the vehicle. After standing ten minutes in quiet, the start was again made, with the same result, together with the addition of difficult breathing, so that it was considered best to unharness the animal. Three days later this same horse was put to a light wagon, and soon developed the same symptoms as before, only to a more aggravated extent, even falling and remaining down several minutes.

After a most exhaustive examination, we found the patient apathetic, rapidly changing the weight upon the posterior limbs, and raising the front feet a *good* distance from the pavement. All visible mucous membranes anæmic. Appetite continued, but food eaten very slowly. All movement slow and burdensome. Respiration somewhat accelerated, but unaccompanied by any sound indicative of pulmonary disease. Temperature, 99.5° F.; feces and urine normal. We diagnosed the case to be one of anæmia. The horse died the next day.

Post-mortem showed paleness of the general muscular system; in the cavity of the abdomen an immense blood clot, but no alterations. As the cause of this hemorrhage a deformation of the third dorsal vertebra was recorded. Right and left upon the body of this member of the spinal column, a considerable exostosis had grown, in such a manner as to almost completely envelop the posterior aorta in an annular growth. This deposition was of a very bony nature, possessing an interior of porosities similar to ordinary cancellated tissue, and an exterior not unlike a mulberry calculus. The aorta had apparently been abraded and pierced by the roughness of this osseous band, for several small apertures were exposed, from which, no doubt, intravitam, blood continually escaped.

From the various strata, of different colors, to be distinguished upon the transverse section of the coagulated mass, one would be led to suppose that this escape had been spread over an extended period of time.—*Badische Thierarztl. Mitth.*

CREOLIN THERAPY IN SCAB.

We were notified shortly that in the district of Homberg, which comes under our supervision, there were two herds of sheep supposed to be afflicted with scab. As a result of the careful investigation at that time undertaken, we found the animals suffering not alone from dermatocoptes communis, but also from sarcoptes squamiferous, which latter had gained a hold upon half the lambs. The disease involved the lips, ridge of the nose, and ears; it was thickly spread over these respective regions, especially the latter, which were stiff and hard from the agglomeration of serum and desquamated epithelium. Both flocks contained the scab to such an extent —more than ten per cent.—that it was deemed advisable to bathe the whole. This was left to us. During the first eight or ten days we prescribed the animals to be treated with a salve composed of equal parts of creolin, anglicum and sapo viridis. Later, a two and a half per cent. solution of creolin came into use as follows: After the animals, including the lambs, had been left two to three minutes in the tank, they were removed to another vessel, where they were drained, and where the ears, lips and nose were dampened with the above solution, and the scabs removed by means of a stiff brush. After an interim of eight days we visited this farm again, and applied the same process of bathing; at this time only a few of the head scabs were noticeable. We again examined these sheep at four or eight weeks respectively, but found no trace of the scab.—*Ber. Th. Woch.*

ANGINA DIPHTHERITICA IN CATTLE.

On the first of April, two cows became sick on a certain farm of an affection possessing a striking similarity to foot-and-mouth disease, and which at that time generated the suspicion that this dreaded plague gained a footing. On the day following the symptoms were present in a better marked degree, and the mouth was continuously opened and closed. In the laryngeal region and intermaxillary space, the animals manifested pain upon pressure. Raw food remained untouched when put before the patients, and they consumed small quantities of nutritious fluids only, with pain. The cattle had pyrexia.

Besides these two animals, four other cows were kept in this stable, three of which were removed a greater distance from the afflicted; one, however, a small heifer, which had been allowed to stay in the vicinity of the suffering animals, became sick the next day. The therapy consisted of inhalations of hay tea, to which a few minims of creolin and oleum terebinthina had been added; application of an epispasticum over the laryngeal and parotid region, and of a drink composed of dilute acidum hydrochloricum in wheat water. The stalls were disinfected. On the fifth day, respiration more difficult, and accompanied by a wheezing, not to say roaring noise; fever higher, nasal discharge exceedingly offensive, brown, and mixed with shreds of desquamated mucous membrane; petechiæ upon the schneiderian membrane; a light hemorrhagic diarrhœa shortly appeared.

In great weakness and distress the cows expired at the end of the ninth day; the young heifer following upon the twelfth, after contracting the disease. The post-mortem, which was undertaken eight hours after the demise, revealed the following interesting changes: Upon the lining membrane of the small intestine and uterine cavity, small patches of a diphtheritic formation; larynx punctated with diphtheritic ulcers. The stomatic membrane was discolored, and appeared to have been eaten by a violent caustic. An extensive lobular pneumonia, consequent upon the settling of dislocated shreds from the epiglottis into the trachea and lungs. All three animals exhibited the same alterations.—*Woch. f. Their. u. Viehz.*

THERAPEUTIC NOTICES.

For tympanitis of cattle colchicum tincture has come into very general use, even in small doses it seems efficacious. As opposed to ammonia and ether it possesses the advantage of not injuring the flesh of the animal. Should death supervene before medical assistance arrive, the flesh of the animals having received either of the latter medicines is not useful since the meat is, to a greater or less extent, flavored therewith. In the administration of tincture colchicum this disadvantage is avoided. It is recommended to give five or six drops in water every ten minutes; other practitioners advise ʒ ij, ʒ iij every hour or two.

Siebel has used europhen in thirty cases of scalds and burns, in the form of an unguentum; he has always secured therefrom rapid and perfect healing. This agent operates by diminishing the secretion and pain. The salve is of a three per cent. strength, and is as follows:

℞	Europhen,	℈ijss,
	Ol. Olivæ,	ʒjss,
	Vaselin,	℥ij,
	Lanolin,	℥i,
M.		

Europhen has also lately been urged as a substitute for iodoform.—*Klin. Woch.*

For cracked hands, as a permanent curative composition, as well as an ointment to be used before undertaking any operation, the *Therap. Monatsch* offers the following:

℞ Mentholi,	gr. jss,
Saloli,	℈jss,
Ol. Olivæ,	gtts. xxv,
Lanolin,	℥iss,

M.
Sig.—Apply t. i. d.

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The regular meeting of the New York State Veterinary Medical Society was held at the Vanderbilt House, Syracuse, N. Y., July 14th, 1892.

Owing to the unavoidable absence of President Huidekoper, Dr. Jno. Wende, Vice-President, occupied the chair, and called the meeting to order at 10 A.M.

The roll call by the Secretary showed the following members present: Drs. Jno. A. Bell, W. L. Baker, Chas. Cowie, J. M. Chase, O. B. French, Geo. Gowland, Wilson Huff, N. P. Hinkley, E. D. Hayden, E. B. Ingalls, C. D. Morris, Wm. Machan, L. A. Robinson, D. K. Seltzer, Jno. Wende, L. E. Willyoung, J. A. Genung, A. H. Ide, R. A. McLean, A. Drinkwater. Several members came in later in the day.

Dr. R. A. McLean explained to the Society the cause of President Huidekoper's absence, saying that he was called to go with his regiment to Homestead and that his professional duties while there made it utterly impossible for him to attend the meeting.

Dr. Jno. Wende then read his paper on the "Treatment of Scabies."

Dr. Hinkley, I think Dr. Wende's paper a very good one and ought to bring forth an interesting discussion.

Dr. Morris.—I move that the paper be laid over for discussion until later in the meeting. Seconded by Dr. Machan, carried.

The reading of the minutes of the last meeting were dispensed with as they were published in both of the veterinary journals of the State.

Dr. McLean.—I move that the minutes of the last meeting as published in the AMERICAN VETERINARY REVIEW and the *Journal of Comparative Medicine* be accepted and passed on. Motion seconded and carried.

Dr. Wende.—The Board of Censors will now receive applications for membership. The following applications were acted upon by the Board of Censors:

W. E. Stocking, V.S., Eagle Harbor, N. Y.; Edward J. McLean, V.S., Buffalo, N. Y.; Jas. A. Rendegrast, V.S., Phœnix, N. Y.; Lewis I. Palmer, V.S., Scottsville, N.Y.; Geo. J. Gangloff, D.V.S., Buffalo, N. Y.; E. H. Nodyne, V.S., Sodus Point, N.Y.; Jas. McKee, V. S., Stapleton, S. I.; Sam'l Somerville Jr., V.S, Buffalo, N.Y.; Wilson S. Carlis, V.S., Carthage, N, Y., and G. G. Dean.

Dr. Wende called the meeting to order, and Dr. McLean introduced Dr. Roberts, a medical man, who was accorded the floor and delivered a very interesting address to the members, reciting some of his experience with tuberculosis during the past few years, saying that he received an inquiry some two years ago regarding Koch's treatment, and he wrote a criticism which appeared in the Chicago *Inter-Ocean*, at the time. He said that 90 per cent. of the profession claim that tuberculosis is produced by a germ, while he knows it to be a fact that it is communicable between animal and man.

Speaking of the quarantine on cattle in Massachusetts going to Maine and New Hampshire, he said that every animal must have a veterinary surgeon's certificate before being allowed to leave the State of Massachusetts. He also said that in Syracuse there were two hundred deaths from consumption in the year of 1891. He thinks consumption is caused by tuberculosis from animals, and claims that people who are susceptible to consumption will take it from the dust of the spittle of the animal. In the New England States more people have consumption than in other States because they are taken from school at the age of fifteen years and placed to work in factories where they are compelled to breathe the dust which causes this fatal disease.

By referring to the statistics of the different States you will find that the death rate from this disease decreases as we go west and south, while in some parts of New Mexico people have been cured after residing in the climate for a time, the air down there being pure enough to cure meat when hung out doors.

Dr. Hinkley.—Do they have tuberculosis in cattle in New Mexico?

Dr. Roberts.—No.

Dr. McLean.—I found that steers coming from the west or south were comparatively free from tuberculosis, while in the New England States at least 33⅓ per cent. were affected. During 1886 and '87 there were three times the number of deaths from tuberculosis than of any other disease in New York City. I know of one family who were said to be suffering from consumption, caused by using the milk from a pet Jersey cow that had tuberculosis. I think people who are susceptible to consumption are liable to have it by using milk from a diseased cow. A bill was brought before the legislature regarding this matter, but when brought up for action was not acted upon. I do not believe there is any pleuro-pneumonia from Virginia to New York now, since it was stamped out a few years ago. Dr. McLean then cited his experience in this matter.

Dr. Roberts.—According to the report of the city Board of Health of Boston, the number of consumptives are less, while those suffering from bronchial troubles are increasing. I think the Government ought to take the matter in hand.

Dr. Morris.—I find that out of ten head brought in to be slaughtered, five or six will be found suffering from tuberculosis and that they are mostly from the east.

Dr. Jno. Wende.—I make a motion that the members of his Society tender their thanks to Dr. Roberts for his very ble and interesting address. Seconded and carried.

Dr. Roberts.—I find in my travels through the New ngland States that 75 per cent. of the population are suffer- ng from consumption. These people would be glad to leave his part of the country for the west and south, but as they re a working class without money they are unable to do so. represent an aid society established for the purpose of ssisting these people and would be pleased to receive any fferings that might be made.

Dr. McLean.—I think that in the office where Dr. Morris s located they are able to stop the sale of cattle affected with leuro-pneumonia, but cannot stop the sale of those affected ith tuberculosis.

Dr. Morris.—That is so, but I think the Government will ake the matter in hand.

Dr. Robinson.—I found a case where the animal had uberculosis and the affected parts weighed twenty pounds r more. I gave it to the Health Commissioner of Buffalo, ho has it preserved. I am told that this class of meat is ooked and eaten by the Pollacks of Buffalo.

Dr. McLean.—I do not think there is as much danger in iseased meat as there is in milk from a diseased cow.

Dr. Hinkley.—We are discussing diseased meat, which is lways cooked before use, thereby avoiding the danger to a ertain extent, while milk is generally used in its natural tate. I think the milk ought to be boiled at all times to estroy the bacilli as far as possible.

Dr. Morris.—The medical men recommend the use of ondensed milk to avoid the dangers of bacilli.

Dr. Wende.—The Secretary will please read the names f the applicants for membership who have been accepted by he Board of Censors. All whose names have been given ere accepted.

Dr. Robinson.—I move we make the gentlemen members f our Society. Carried.

Dr. Wende.—Any unfinished business?

Dr. Morris.—No.

Dr. Wende.—We will listen to report of the Committe on Arrangements.

Dr. Hinkley.—As a member of that committee, would sa we made the best arrangements we could.

Dr. McLean.—I move the report be accepted and con mittee be tendered a vote of thanks. Carried.

Dr. Wende.—The Committee on Publication please r port.

Dr. Hinkley.—I will include the report in my annual r port, and hope the Secretary will be excused from acting o all committees in the future.

Dr. Wende.—Committee on Legislation please report.

Dr. Morris.—The Committee has reported from time t time. I hoped to be able to furnish some new reports r garding this matter, but am unable to do so. It was a har task to get the bill before the members of the Legislatur The more the question was brought before them the mor they were found to be in favor of it. I found the most o position was from Dr. Goldberg, member of Assembly, wh asked if we could find among the profession of this State me who were able to dictate to the balance of the professio throughout the State. But the main objection was want c money. Mr. Duffy wanted $500 to pass the bill through, an we failed because we did not have the money to give ther I think if we cannot get it in this State we can get it fror the United States, as all western States have better laws i this matter than we have in New York State. I think w can do more in a higher authority and get more than in th Legislature of New York State. No matter how small a amount we asked for it would be refused on general princ ples, in not passing it before. We have schools that ar qualifying men in a course of one year. These schools ough to be done away with.

Dr. Morris offered the following resolution:

It being the object and desire of this Society to lend it influence and individual energy to promote the best welfar to build up and sustain the highest standard possible in ou honorable profession, to watch with jealous care the approac malicious influence emanating from societies or institutions hich are holding out inordinate inducements to men of lim- ed education, claiming to thoroughly equip and place them fore the public in an acceptable manner upon short time as alified veterinarians—the tendency of which only drags wn and degrades the character of the profession, and that e believe the standard should be made higher and more iform in character, and which we believe would be effec- al only through centralized authority. Be it

Resolved, That this Society, with one accord, ask of the nited States Veterinary Medical Society at its next annual eeting that steps be taken by the Committee on Legislation seek by legislative enactment through Congress the estab- hment of a National Board of Examiners, with authority to nfer the diploma of " The Veterinary Regents of America," d that the degree so conferred shall be final and the only cognized certificate of proficiency to practice the art in the nited States.

Dr. Morris spoke very favorably of having it offered the meeting of the United States Veterinary Medical ssociation, to be held in September, 1892, and acted on, as great benefits would be derived by having a United ates Board of Regents established which would compel all terinarians to pass the examination of this board, thereby king a universal standard throughout the United States.

Dr. Wende.—Have any of the members any remarks to ke on the resolution offered by Dr. Morris?

Dr. McLean.—It would not be constitutional to pass such aw as Dr. Morris suggests. It is a stepping-stone to es- blish a national school for veterinary medicine, and we can- t do it. I move the report be received. Carried.

Dr. Morris.—I do not agree with the Doctor, judging from r experience when we started. Professors Law and Liau- d say it is constitutional. I prefer it should be worked for w York State alone, and would like to see it succeed, but will take money to do it.

Dr. McLean.—I think the bill as presented was all right, we could get it. But there cannot be general laws that ll interfere with State laws.

Dr. Morris.—I think we can get it if every man will wo for his Congressman. I agree with Dr. McLean; let every m see his Senator and Assemblyman. I had to face one hundr letters from empirics when at Albany, and I cannot expre a very favorable opinion of Dr. Goldberg as a professio man.

Dr. Baker.—The member from my district supported t bill.

Dr. McLean.--Kings and Queens counties will suppo the bill.

Dr. Hinkley.—I am fully in accord with the bill, but thi we ask too much. Let us ask for a distinction to be made l tween the veterinary surgeon and the farrier, and get passed. I would like to see the members of this Socie attend the meetings more than they do, and not stand ba and ask for protection, but come forward and work on t committees.

Dr. McLean.—It should be made a cause for punishme if they do not do so.

Dr. Morris.—Some members of the Legislature think ought to protect the empiric, and help to raise him instead asking for laws to compel him to come up to the standa It was Dr. Goldberg who helped to a great extent to def the bill.

Dr. McLean.—I think we ought to amend the present l by giving the State Society power to prosecute all empiri who come here to practice.

Dr. Hinkley.—Do you want an amendment to the prese law that will compel all veterinary surgeons to register?

Dr. McLean.—Yes; and give the State Society power prosecute all who are not registered.

Dr. Hinkley.—I do not think we can punish them, as one will do it for us.

Dr. Baker.—The fine for not registering is $200 as the l stands now.

Dr. Jno. Bell. I make motion to adjourn until 2 P. Carried.

AFTERNOON SESSION.

Dr. Jno. Wende. Is there anything further concerning matter of legislation?

Dr. Jno. A. Bell: I move the report of the committee be eived and approved. Carried.

Dr. McLean. I move that the committee be continued, l that they prepare an amendment to the present bill, giv- power to the State Society to prosecute all who are prac- ng without complying with the law of 1886, and prosecute who swear falsely, for purjury, fine them, one-half of fine go to the Society. Carried.

Dr. Morris. Will the Secretary read the names of the mmittee on Legislation?

Dr. Hinkley. The following are the members of this com- tee: Drs. R. A. McLean, C. D. Morris, R. R. Bell, N. P. nkley, Geo. H. Berns and Professors James Law and A. utard.

Dr. Wende.—Committee on By-laws and Constitution ort.

Dr. McLean.—We have not been able to make any prog- s as yet. I as chairman have notified the members of the mittee to meet, once at Albany and once at Syracuse, but ng unable to get them together we could not act, I move report be accepted and the committee be discharged.

Dr. Morris—I amend that we accept the report with nks to the committee. Carried.

Dr. Hinkley.—I make a motion the Vice-President be em- vered to appoint a committee of five on revision of by-laws constitution. Carried.

Dr. Wende.—I appoint the following as a Committee on vision of By-laws and Constitution: Dr. R. A. McLean, irman, Brooklyn; Dr. L. E. Willyoung, Albion; Dr. Jno. Bell, Watertown; Dr. C. D. Morris, Brooklyn; Dr. W. Baker, Cortland.

Dr. McLean.—I would suggest that all essayists write r papers from their own experience and not copy from ks or journals.

Dr. Wende.—Any new business?

Dr. Hinkley.—I have a letter from Dr. W. Horace Ho kins, Secretary of the United States Veterinary Medic Association. He is very anxious that this Society should b well represented at their next meeting to be held at Bosto Mass., in September, 1892, and I would advise all who are n members of that Society to send in their applications at once it will be a three days' session, and I am sure you will all enjo it very much. The important question of how we shall vis the International Meeting in Chicago, in 1893, will be freel discussed and decided upon. Also the question of the standar of members of the profession who will be allowed to becom members of the Association. It will be a great benefit t all of you to attend, as most of the members of this Associatio are very talented men.

Dr. Morris.—I want the Society to make as good a showing as possible at this meeting, as important questions will b discussed.

Dr. Willyoung.—Elect as many delegates as will atten

Dr. Wende.—Will the gentlemen who expect to atten stand up. The following were elected delegates to atten the meeting of the United States Veterinary Medical Ass ciation, to be held at Boston Mass., in September, 1892. Dr E. J. McLeod, N. P. Hinkley, C. D. Morris, Jno. A. Bell, Jn Wende, W. L. Baker, J. M. Chase, R. A. McLean.

Dr. Morris, I coincide with Dr. McLean's idea of writin papers on facts as they occur in our practice. I would lik good advice on castration in lower animals. I try every manner possible to make it a successful operation, by keepin everything clean and using antiseptics in every instance, an yet the colts will die, while on the other hand the empiric will go out and castrate a colt on a manure heap, using dirt ropes, dirty cords and everything about him smeared in dir and his case will come out all right; if any of you can tell m the reason why I would be pleased to learn.

Dr. Wende.—I have had a large experience in castratio operated upon three hundred last year and lost three wit peritonitis; at the same place I lost two this year. In on stance last year I operated on four for one man ; one was nt to the pasture and recovered nicely, three were kept near e barn and two of them died, but I saved the third one.

Dr. Cowie.—I think quacks lose more than we know of, hile if we lose one our reputation is at stake and it is ported.

Dr. Chase.—I want to ask Dr. Wende what he thinks used the death of his colts?

Dr. Wende.—In one case where a quack operated the year efore I think the colts were trifled with ; I think where other seases are being treated at the same place death will be used by germs, and that the germs can be carried in the othes from place to place.

Dr. McLean.—I will not castrate any more in my hospital.

Dr. Hinkley.—I will not castrate any more in my hospital, d had decided upon this some time ago.

Dr. Morris cited a case where he believes he carried tanus from a patient to a colt recently operated on and it ied.

Dr. Chase.—Is there any one present who has castrated ithout losing any?

Dr. W. Huff. I have never lost a case.

Dr. W. L. Baker. I can say the same.

Dr. Chase. I make motion that Dr. Wende appoint a mmittee of two, to choose subjects for the members to write n and discuss at the next meeting. Seconded and carried.

Dr. Wende. I appoint Dr. R. A. McLean and Dr. J. M. hase. The subjects chosen were: "Influenza and its compli- ations." "Antiseptics, their Uses and Modes of Applica- on." "Tuberculosis, especially its Generation."

Dr. Hunter. I would like to hear the opinion of the embers on purpura-hemorrhagica. I was called to a case here a good mare had a swelling as large as the fist about alf way down the trachea. She looked well, appetite was ood. At first I thought it was a bruise caused by the man- er ; after a week I was called again and found the neck badly vollen all the way to the thorax. She could drink water ood, but the food came out of the nostrils when trying to swallow. I gave aconite, fomented the swellings; after a few days she appeared all right. The symptoms of purpura were prevalent. I gave ergot, chlorate of potash and tinct. iron. The head was swollen, but after a few days the symptoms all disappeared and she seemed all right. On following Sunday I was called and found her in pains similar to colic; gave a hypodermic injection of morphia, which quieted her, but she died that night. I held a post-mortem the next afternoon; did not find any injuries internally, but on taking off the front leg I found an abscess on the inside of the scapulus, about the size of a two-quart pail. I had three cases, all presenting different symptoms. There were abscesses in two of them, but not any in the third. Have had several cases during past two months. Have the best results from treating with nux vomica.

Dr. Morris. I have good success by evacuating the bowels and treating locally with stimulants and tonics.

Dr. Robinson. I had two cases which I treated successfully with powered and fld. ext. nux vomica.

Dr. Hinkley. Have any of you derived any benefit from giving chlor. potash in purpura?

Dr. Willyoung. Only in quantities sufficient to produce a laxative condition of the bowels.

Dr. Hinkley. Would you advise using it to produce a laxative effect in purpura?

Dr. Willyoung. No sir.

Dr. Morris. I like iodide potash best.

Dr. Hinkley. I have treated twenty-five to thirty cases without loss of any; used po. nux vomica, quinine and tinct. iron, and used turpentine for the kidneys if needed. I use ice instead of fomentations.

Dr. Baker. I use iron and quinine successfully.

Dr. Morris. I think Dr. Hunter treated scientifically; I have used ice water with good results.

Dr. Hunter. How do you use ice?

Dr. Hinkley. Use a packing of ice and brand or salt and bind on. I think Dr. Hunter's cases would have proven fatal under any treatment. I know of veterinarians in Cleve-nd who use per-oxide hydrogen successfully. I have had o success with it in purpura.

Dr. Drinkwater. Have any of you had a case of purpura dogs? I have a case; the symptoms are similar to those a horse.

Dr. Hinkley.—Had the dog been sick previous to this?

Dr. Drinkwater.—Yes, two or three weeks with dis- mper; I have not had time to study up the case thoroughly efore coming to the meeting.

Dr. Baker.—I have several cases of a disease in the region the horns of cattle caused by a small black fly. Do not nd a remedy as yet.

Dr. French.—Have had several cases and used tar with ood results; I do not consider it a serious trouble.

Dr. Palmer.—Have treated several cases successfully with r.

Dr. McLean.—I make a motion that all members who are vo years in arrears must pay up before the next meeting or ave their names dropped from the roll, and that the Secre- ry notify them to this effect. Carried.

Dr. McLean.—I make a motion that a special assessment $2.50 be made on each member of this Society to liquidate e indebtedness of the Society. Carried unanimously.

Dr. Robinson.—I make a motion that the matter pertaining Drs. Wm. Somerville, Wm. Somerville, Jr., and Robt. M. omerville be brought before the Board of Censors to be cted upon. Carried.

Dr. Wende.—Will the Chairman of the Board of Censors eport what action has been taken in this matter.

Dr. Jno. A. Bell.—We have not received any correspond- nce from the Drs. Somerville on this matter, consequently ave taken no action thus far.

Dr. Wende.—The Secretary will please read the corre- pondence on this matter.

The Secretary read all of the correspondence on the atter.

Dr. Wende. What action will the Board of Censors take?

Dr. S. Somerville, Jr.—I make a motion that the matter

pertaining to Dr. R. M. Somerville be laid over until t
next meeting.

Dr. McLean. We ought to settle it now and not allo
these matters to drag along.

Dr. Wende. I appoint Dr. McLean to fill the vacancy
the Board of Censors during this meeting. Said vacan
caused by absence of Dr. James.

Dr. Wende. The Board of Censors will retire to
private room in company with Dr. S. Somerville, Jr., to a
upon the matter pertaining to the Drs. Somerville.

The following is the decision of the Board of Censor
That the resignation of Wm. Somerville, Jr., as received,
not accepted, that he be expelled from the New Yo
State Veterinary Medical Society. That the cases of W
Somerville, Sr., and Robt. M. Somerville be laid over un
the next meeting, and that no charges have been preferre
against S. Somerville & Son; and that Wm. Somerville, S
and Robt. M. Somerville be notified by the Secretary to a
pear before this committee and confirm the explanati
given to-day.

Jno. A. Bell, Jno. Wende,
R. A. McLean, O. B. French,
J. M. Chase,
Board of Censors.

During the special session of the Board of Censors qui
a discussion took place regarding hernia in colts and calve
and the different modes of treatment. Several membe
cited some cases with which they had to deal during the
practice. The subject of the black fly, which has appeare
among the dairy farms of this State, was brought up agai
for discussion and several remedies were recommende
among them crude oil, fish oil and carbolic acid, the latt
recommended by Prof. Law.

Dr. Robinson gave a very interesting description of a ca
which he had in his hospital. A horse seven years old ran
stick into his body eighteen inches; during the treatment h
made incisions in seventeen different places and removed tw
quarts of pus from the sheath; after six weeks' treatmen

sing peroxide hydrogen and salicylate soda and quinine as a onstitutional remedy, he made a good recovery.

A discussion regarding changing the place of meeting at ifferent times led to a vote which resulted in favor of changing; also the matter of having one meeting per year of two ays' session, instead of two meetings of one day each. A ote resulted in favor of the former, this was done to get the pinion of the members present. The change cannot be ade until after the revision of the by-laws.

Dr. McLean. I find that I can always learn something of alue to me at these meetings. At the annual meeting the ıbject of pyoktanine and its uses was discussed. Since then have met with wonderful success in using it; I feel that I am debted to the New York State Veterinary Medical Society r this.

Dr. Bell. I have used it with equally good results.

Dr. Wende. I have used it with good results where her remedies have failed.

Dr. Baker. How does Dr. Hinkley use pepsin in fistulaithers?

Dr. Hinkley. I fill the cynus full of crystal pepsin and e wound with absorbent cotton; I find that it eats its way rough. I have found it very good in poll-evil also, I have aled some with pyoktanine.

Dr. Wende. I use spirits turpentine in fistula-withers and t good results.

Dr. Chase. What becomes of the cynus?

Dr. Wende. It fills up with granulations. I used it on y own horse six years ago and have had no trouble with it ıce.

Dr. McLean. Do you recommend the injection of one or o drachms of turpentine into the sores?

Dr. Wende. Yes; it will not hurt them.

Dr. Gowland. I get good results from iodine one part, ycerine two parts.

Dr. Bell. How long do you use turpentine?

Dr. Wende. Until it is all healed.

Dr. Chase. How much do you use?

Dr. Wende. Enough to fill the sore.

Dr. McLean I was called in consultation in a case of fist la withers; passed probe down 7½ inches, cut through, an drew seton through. At the end of five days again sent f me; I found a nasty discharge; took out seton, used inje tion of pyoktanine; made good recovery.

Dr. Bell. I would like to have a treatise on locomot ataxia.

Dr. McLean. Would suggest two ounces lead an powder.

It was getting late, and all business being disposed of, was moved and seconded that the Society tender a vote thanks to Mr. Fife for his kindness in granting the use of th assembly room to the Society, and that we adjourn unt the annual meeting, to be held in January, 1893, subject a call by the Secretary.

N. P. HINKLEY, D.V.S., *Sec'y.*

MASSACHUSETTS STATE VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary A sociation was held at 19 Boylston Place, Boston, Wednesda evening, June 22d, 1892, at 7.30 o'clock. President L. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Becke Burr, Emerson, Hadcock, Harrington, Howard, Marshal Osgood, Peterson, Winchester, Winslow, Hitchcock, Parke LeBaw, and the Secretary. Honorary member: Dr. Stic ney. Guests: Mr. T. L. Bolton, of Clark University, essa ist of the evening; E. P. McKenna, M.D.V., and Mr. W. Balmer.

Records of the last meeting read and accepted.

Motion made by Dr. Hitchcock that Dr. Bunker be give a vote of thanks for the paper read by him at the last mee iug. Carried.

Dr. Burr brought up the point that cases reported b members should not be fathered by the Association as co rect, unless the diagnosis was verified by a microscopic e mination in instances where the microscope could settle a atter of doubt. For instance, Dr. Bunker's case of tuberulosis of the liver in a bull should be settled by finding the ubercle bacilli in the specimen before we accept it as such. he members present seemed to think this point well taken.

Dr. Howard here left the chair, which was taken by 1st ice-President Burr.

Dr. Burr thought it ought to be voted by the Association hat it could not accept Dr. Bunker's case of tuberculosis of he liver until it was properly verified.

Dr. Hitchcock thought it would be sufficient if the Presient ordered the Secretary to make a note in the records pon the point in dispute.

The name of Dr. Wm. Stinson, of Chelsea, a graduate of e New York College of Veterinary Surgeons, was then bal-ted upon, Dr. Winchester, teller. Sixteen votes were cast ll in the affirmative. Dr. Stinson was therefore declared lected.

Applications for membership were received from Wilbert oule, M.D.V., and E. P. McKenna, M.D.V. Dr. Osgood, hairman of the Executive Committee, reported favorably pon their credentials. The names were laid on the table to e voted upon at the next regular meeting, according to the rovisions of the Constitution.

Dr. Howard here took the chair again. He said that as is was the last meeting of our Association before the meet-g of the United States Veterinary Medical Association in eptember, we ought to send its Secretary an official notice f our plans for entertaining its members.

Dr. Osgood moved to invite the members of the United tates Veterinary Medical Association to be our guests ednesday, the second day of the meeting.

Dr. Osgood amends his motion to read Wednesday after-oon. Considerable discussion followed. Dr. Bryden op-osed having a recess the second day, on the ground that the tertainment would break in too much on the routine work id out for the meeting.

Dr. Winchester thought that if a recess were taken by 3 4 o'clock Wednesday afternoon, it could do no harm.

Drs. Osgood and Hitchcock both spoke in favor of breaking the monotony of the meeting by having the Association's entertainment on the afternoon of the second day.

Dr. Burr sided with Dr. Bryden, believing nothing should interfere with the routine of the meeting, and that it would be better for entertainment to come upon the third day.

The question was then put, and the motion carried.

Mr. T. L. Bolton, of Clark University, Worcester, then read a very interesting paper upon the results of the microscopic examinations made there upon the old horse killed at Ward's Wharf last July, owned by the Association, and treated awhile by Dr. Bryden. (For Dr. Bryden's report see the records of the meeting held Nov. 25th, 1891.)

Mr. Bolton's paper proved very interesting. He reported certain degenerative changes in portions of the cord and its nerves, sent to the university for examination. Of course, one swallow does not make a summer, but it would be interesting to examine a number of cords from horses with springhalt and see if similar changes could be found.

(NOTE.—Members of the veterinary profession having any cases of death among patients that may have been afflicted with springhalt, might be benefitting science by removing the portion of the cord, with some of the nerves of the lumbo-sacral plexus, and sending the same to Dr. H. H. Donaldson or Mr. T. L. Bolton, Clark University, Worcester, Mass., where they will be very glad to make the microscopic examination. If possible, a history of the case ought to accompany the specimen. The specimen should contain the cord posterior to the tenth dorsal vertebra, with some of the lumbo-sacral nerves. It should be carefully removed, and sent in a glass jar containing a $2\frac{1}{2}$ per cent solution of bichromate of potash plus $\frac{1}{6}$ of its volume of 95 per cent. alcohol.)

Mr. Bolton's paper was discussed by many of the members present. Dr. Bryden said that he took cognizance of the fact that there might be changes in the spinal cord, but he questioned whether they were primary or secondary. He holds that solipeds, animals with feet confined in a horny box, are liable to peculiar forms of lameness, and that these trous begin in the hoof, leading later to disturbances higher ; these might occur in the muscles first, causing the tail to carried to one side, or skipping a little when hurried be- e going lame. So in navicular disease, the first changes e place in the horny box itself, afterward leading to the inges in the bone, etc.

Dr. Bryden believes in "hoof culture." Don't fire and ster a spavin; it is humiliating to the profession, but attend the foot. But to return to this case, he thinks the changes he cord were secondary.

Mr. Bolton does not agree to this, because sensory changes he cord cannot be secondary. The degeneration is *from center* to the *periphery.*

Dr. Bryden thinks that solipeds have a class of diseases t no other animal is subject to, and that these progress m the periphery in, and cannot be a chorea or anything that. He thinks we have a splendid subject for investi- ion, but holds that it is peripheral disturbance.

Dr. LeBaw thinks the breaking of a small artery anterior he lesions found ought not to cause a degeneration of the d, as a small artery is given off at every articulation, and stamoses are free there.

But, Mr. Bolton says, if a nerve's nutritive supply is cut that fibre dies to where it comes in contact with the next ve cell, the nerve cell is the center of nutrition for that e—that is, for a sensory fibre, while a motor fibre degen- es toward the brain.

Dr. Marshall wants to know if it can be a hereditary dis- . Can a blood vessel be hereditarily weakened? All do agree that it is hereditary.

Dr. Parker remembered seeing a tumor in a cord in which degeneration extended both ways. Can this occur from rupture of a blood vessel?

Mr. Bolton. That depends upon the size of the area sup- d by that blood vessel.

Motion made by Dr. Hitchcock that we extend to Mr. ton and the professors at Clark University a vote of thanks the trouble they have taken in investigating this case. ried enthusiastically.

Moved by Dr. Hadcock, that we have a special meetin the second Wednesday in September. Carried.

Meeting then adjourned.

AUSTIN PETERS, *Secretary.*

UINTED STATES VETERINARY MEDICAL ASSOCIATION.

PATERSON, N. J., August 16th, 1892.

DEAR SIR:—It is my very pleasant duty to advise yo of your appointment as a member of the New Jersey Stat Committee of Arrangements—United States Veterinary Me ical Association. A list of the members of this committee enclosed herewith, so that you may know who your associat are. It has been my object in the selection of this committe to make it representative of the veterinary profession of Ne Jersey in the fullest sense of the word.

Dr. Hoskins writes me that the hall has been obtaine and that the usual one and one-third rates have been concede us by the Trunk Line Association, which covers our entir territory. A special method is being made to make the fort coming meeting at Boston a greater success than any prece ing meeting of the Association, and the profession in Ne Jersey should be fully and ably represented.

It will be necessary to call a committee meeting very soo in order to complete the local arrangements. Dr. Hoskin suggests that the committee issue a circular setting forth th facts about the Boston meeting, to be sent to every veterin rian in our State. I trust you will assist the cause with you presence and counsel.

I should be very pleased to receive suggestions from yo Let me hear from you at once, before the committee meetin is called.

Very respectfully,

WM. HERBERT LOWE,

Resident State Secretary, New Jersey U. S. V. M. A

NEW JERSEY STATE COMMITTEE OF ARRANGEMENTS.

Annual meeting at Boston, Mass., September 20th, 21s and 22d, 1892: Drs. William B. K. Miller, Camden; R. I oblein, New Brunswick; Richard R. Letts, Hoboken; Jo-eph Autenreith, Jersey City; D. J. Dixon, Hoboken; James). Hopkins, Newark; James W. Hawk, Newark; E. R. oorhees, Plainfield; J. Huelsen, Jr., Jersey City; A. T. ellers, Camden.

WM. HERBERT LOWE,
Resident State Seeretary, New Jersey U. S. V. M. A.

PATERSON, N. J., August 5th, 1892.

pproved.

W. HORACE HOSKINS, *Secretary*.
RUSH S. HUIDEKOPER, *President*.

NEW JERSEY VETERINARY MEDICAL ASSOCIATION.

The last regular meeting of the New Jersey Veterinary edical Association was held at Saenger Hall, Belmont venue, Newark, N. J., on Thursday, August 11, 1892. eeting called by the President (Dr. Dustan), at 11 A. M.

DR. W. H. COOPER, *Sec'y*.

ENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of this Association will take ace on the 6th of September, at the Hotel Allen, Allentown.

A cordial invitation is extended to members of the profes-on desiring to attend. Among the many inducements offered the Association are the readings of the following papers: Tuberculosis in Cattle," by Dr. L. Pearson; "Criptorchids," Dr. J. A. Waugh; "Spavin," by Dr. J. C. Bartholomew, d "Intussusception," by Dr. J. S. Butterfield.

INDIANA VETERINARY ASSOCIATION.

After a period of two years of inactivity, a meeting of the diana Veterinary Association (Indiana Association of Veter-ary Graduates), was convened at the State House, Indianapo-, July 20th, 1892, with Vice-President C. F. Bell, of Koko-o, in the chair.

In the absence of the secretary, G. G. Ferling, V.S., was appointed secretary pro tem. Present: C. L. Bell, Kokomo; E. F. Diggs, Winchester; M. Y. Schaffer, Greenfield; G. G. Ferling, Richmond; A. D. Galbraith, Greenburg; T. L. Armstrong, Indianapolis; W. L. Williams, LaFayette; J. H. Honan, Delphi; J. E. Cloud, Richmond; Lee Hoover, Richmond; Dr. Klotz, Arcadia; H. G. Carnes, Franklin; Prof. T. S. Smith, State College, Miss.

The following new members were elected: W. L. Williams, LaFayette; J. H. Honan, Delphi; Dr. Klotz, Arcadia; H. G. Carnes, Franklin. T. L. Armstrong, of Indianapolis, was elected an associate member.

No election having occurred at the regular time in January, 1892, officers were elected for the remainder of the year as follows: President, W. L. Williams, La Fayette; first Vice-President, C. F. Bell, Kokomo; second Vice-President, G. G. Ferling, Richmond; Secretary, J. G. Cloud, Richmond; Treasurer, A. D. Galbraith, Greensburg.

The Association then listened to a paper entitled "Contagious Pleura-Pneumonia of the Horse," by W. L. Williams, which was followed by a discussion participated in by Drs. Butler, Bell and Honan.*

The report of the retiring Treasurer, E. F. Diggs, showing a balance on hand of $14.26, was submitted and approved. The treasurer prior to Dr. Diggs had apparently been careless in the keeping of Association accounts, and it was found impossible to determine each member's arrears in dues, and on motion of Dr. Bell, the treasurer-elect was ordered to collect delinquent dues for 1891 and 1892, and receipt therefor. The Treasurer was instructed to produce suitable stationery for conducting his duties.

On motion of C. F. Bell, it was decided to hold the next regular meeting at Kokomo, in January, 1893.

The President briefly called attention to the approaching meeting of the United States Veterinary Medical Association at Boston, September 20th to 22d, and urged Indiana veterinarians as far as possible to attend.

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* This paper is published in this issue.

Although this meeting was by no means what could have en desired, the interest and determination manifested by se present indicated clearly that a united effort is to be de to place the Association on a firm footing, aud a suc- sful meeting at Kokomo in January is confidently icipated.

J. E. Cloud *Sec'y.*

W. L. Williams, *Pres.*

BIBLIOGRAPHY.

MALADIES DU JEUNE CHEVAL (Diseases of Colts). By M. P. Champetier. J. B. Bailliere and Son, 19 rue Hautefeuille, Paris.

By their frequency, sometimes their nature, and the severity mortality which accompany their appearance, diseases st common to horses in their youth, as colts, present spec- interest, particularly to breeders, and also to the veterinar- practicing in breeding districts.

In this book of some three hundred and forty-eight pages, h several colored plates, the author successively passes in iew gourme (distemper, strangles?), scarlatinoid, equine iola, infectious pneumonia, diarrheic enteritis, arthritis of s, aphtha, and parasitic affections. Written in a concise scientific manner, Maladies du Jeune Cheval will be a d addition to the library of the veterinarian versed in nch.

PHYSICIAN HIMSELF. By D. W. Cathell, M.D. Tenth Edition. A. Davis & Co., Philadelphia.

The tenth edition of this book has been sent to us. It is pleasure that we again read the sound and good advice odied in its pages by the author. To many of our read- the title might suggest but little benefit in perusing it, in the Physician Himself, the young veterinary graduate, inexperienced veterinarian, and even the older practition- vill find discriminating points of conduct which will be of eding benefit. It is, so to speak, a course on ethics; but thics based on rules of what is right and proper conduct he professional man to reach success in life.

SUNDRY ITEMS.

From the *Edinburgh Veterinary Gazette* we extract the fo lowing changes made in the Faculty of Dick Veterinar College:

The new appointments in connection with the Roy (Dick's) Veterinary College, consequent on the resignation Professor M'Fadyean, are as follows:—Chair of Veterinar Surgery and Obstetrics, J. R. M. Dewar, F.R.C.V.S.; Cha of Anatomy and Histology, A. E. Mettam, M.R.C.V.S.; an Lectureship in Pathological Histology and College Assistan S. Stockman, M.R.C.V.S. All three gentlemen are grad ates of the college. Mr. Dewar was a distinguished memb of Sir Joseph Lister's class in the University. Mr. Metta gained the Dick Bursary for 1889, and was also first priz man in the Fitzwygram competition for that year. M Stockman, after graduation, went to Alfort, and worked Nocard's laboratory.

New Dog Hospital.—Among the important and inte esting buildings recently started in Philadelphia, there is o of unusual interest from the particular purpose to which is devoted. Some time since the Trustees of the Universit of Pennsylvania authorized the building of a hospital for dog the architects appointed being Frank Miles Day & Brothe

Considerable time was taken for giving the plans and t entire project the fullest consideration in order to make t building the most complete and efficient of its kind in t world, which it will be, though the first in this countr There are several in Europe, a notable one being at Berli which, in some particulars, this will resemble, though it w be larger and more complete.

Under the supervision of the architects it is now bein erected on the grounds of the University of Pennsylvania West Philadelphia, and will be completed in September.

The exterior will be very attractive, of Roman hydraul pressed face-brick and pebble-dashing, with Lake Superi ed-stone trimmings, the roof being of unfading green slate. t will cover an area of about 65x50 feet.

There will be two stories and a basement, the latter to ontain, besides the rooms for ordinary cellar purposes, a itchen with every facility for cooking the food for the dogs, eating the water for the baths, etc.

On the first floor the commodious clinic room will open to the elegant apartment, that for non-contagious cases. At ither side of the latter will be the mange ward and the disemper ward, both being separated from it by heavy brick artitions, the communication with all other parts of the uilding from these wards being effected only by going outde and around.

In the three principal wards, as also in the bath-rooms onnected with them, there will be polished granolithic paveents, and the walls to a height of five feet will be covered ith six-inch square white enamelled tiles. Above the tiling e walls and the ceiling will be of adamant plaster. The ogs will be in separate cages upon wheels, and may thus be emoved for disinfection, to the baths or to the clinic. From fty to sixty of these cages will probably be in use.

There will be special bath-rooms connected with all the ards, which with all the plumbing, have been matters of reat consideration and are the best of the kind for the puroses. The bath-room for the non-contagious and surgical ard will be entirely apart from that of the mange ward. In e latter there will be two baths, one for the ordinary bathing d a smaller one for the medicated baths. There will be ine sinks and the drainage will of necessity be most carefully ttended to.

Perfect systems of heating and electric lighting will be inoduced, the special system of ventilation having been deised in consultation with the department of hygiene of the niversity. There will be special ventilating flues for each om, and each flue will be provided with a small electric fan, us insuring perfect control of each separately, and perfect entilation for all.

The second story will be of the same dimensions as the ground floor, and divided into four rooms of sizes correspon ing with the wards below, to be used as biological, patholog cal, physiological and histological laboratories.

Beside the specialists connected with this new branch the University there will be the necessary and proper staff act as superintendent, nurses and caretakers.

It has been decided that arrangements will probably made whereby dogs not requiring special treatment, but b longing to persons who leave town in summer or any oth time, will be properly cared for at such times in this institutio

STRONTIUM LACTATE IN TÆNIA., Labor de (*Journal Med. de Paris*) has had excellent results in tænia with th usual dietary care from the following:

℞	Strontii Lact. (Paraf-Java),	ʒ j,
	Aqua,	ʒ viij,
	Glycerini	q.s.,

M.S.—Two teaspoonfuls every morning for five days.

This is practically the same strength as the standard sol tions of Stront: Lact: (Paraf-Javal) used so largely in Alb minuria.—*Medical Standard.*

AS BROMIDE OF STRONTIUM seems to be destined to di place the bromide of potassium, we would specially recon mend our readers to insist on having the chemically pu salts (Paraf-Javal) dispensed, or the standard solutions (ʒ j t the fluid ounce), so as to avoid further accidents, as we lear that toxic effects have been caused by the dispensing of in pure strontium salts, the poisonous barium being a concom tant of the strontium preparations of commerce.—*St. Lou Clinique.*

AMERICAN VETERINARY REVIEW,

OCTOBER, 1892.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—
The twenty-ninth annual meeting of the United States
eterinary Medical Association is just over, and its members
y justly feel proud of the results which have been accom-
ished. We are sure that those who were so fortunate as to
present will never forget the profit and pleasure attending
e sociable and friendly gathering of 1892 in Boston.

It is not our intention at present to present a resume of
entire transactions of the three days during which the
eting continued in session. Peculiar circumstances com-
lling us to postpone this, aside from the fact that they are
be published by the Association. We, however, desire to
l the attention of our friends to some points of importance
ich should not be overlooked, and need not be deferred.
nong these we first refer to the increase of membership by
admission of 101 out of a list of 106 candidates, the larg-
accession ever known in the history of the Association,
d bringing its roll of membership to over 350 associates.

Secondly.—The adoption of the amendment presented last
r, which reads as follows:

> "ARTICLE I. Any applicant for membership shall submit his name upon
> of the Association's application blanks, duly vouched for by one or more
> nbers of the Association, or by the resident State Secretary of his respective
> e. He shall be a graduate of a regularly organized and recognized veteri-
> school, which shall have a curriculum of at least three years, of six months
> , specially devoted to the study of veterinary science, and whose corps of

instructors shall contain at least four veterinarians. If of a medical school similar curriculum as to time shall prevail."

This alteration to go into effect after the annual meeting of 1892. It sha not be retroactive, nor apply to applicants who were college matriculants pri to its passage.

This was unanimously passed, with the understanding tha it was not the spirit of the amendment to exclude matriculants of colleges for the session of 1892-1893. Whateve may be the effect of the adoption of this amendment upo the various questions which may arise under its operatio must be determined by the experience of the future.

Thirdly.—The presentation of their report by Committe of Arrangements for the International Meeting, and its almos unanimous adoption by the Association, only a single sectio receiving a slight amendment. The general plan of the committee is indicated in the following resolutions:

1st. That the next meeting of the Association shall b known as "The Thirtieth Anniversary Meeting of the Unite States Veterinary Medical Association and First International Veterinary Congress of America," and that it shall last fou days.

2d. That a circular letter of invitation be addressed to th membership of the profession in the United States, and als to European veterinarians, asking their co-operation in th congress.

3d. That a special invitation be addressed to one of th officers of each of the national veterinary representativ bodies of Europe.

4th. That besides the usual reading of papers, some important subjects of international interest relating to veterinar science be selected, and that committees be appointed to mak reports on the same, for the purpose of their discussion b the Congress.

5th. That a special assessment be made upon each membe to defray the extra expenses of the meeting.

Fourth.—The election of officers resulted in the selectio of Dr. W. L. Williams, V.S., of Lafayette, Ind.; A. W Clement, V.S., of Baltimore, Md.; W. H. Hoskins, D.V.S., o Philadelphia, Pa., and J. L. Robertson, M.D., D.V.S., New York.

By a suspension of the rules, the old board of officers ere authorized to conduct the business of the meeting until ıe time of adjournment, when the new board should enter pon the performance of their official duties.

This change in one of the old customs of the Association ecame necessary in consequence of the amount and the imortance of the work undertaken and accomplished by the ıeeting.

While these might be considered subjects of exceptional iterest at this meeting, it must not be supposed that we inend to consider as of secondary importance the courteous nd friendly hospitality offered by the Massachusetts State eterinary Medical Association, including an excursion in oston harbor, its dinner, and its theatrical party. Nor do e desire to ignore the graver incidents of the last day, when ıe Association was treated by Drs. Salmon, Winchester, Villiams, Kilbourne, Gadsden and Johnson to a series of most aluable and interesting papers. Neither have we forgotten ıe splendors of the banquet at Young's—but as we have said -time presses upon us, and desirous always to be faithful to ur engagements, we must for the present suspend our reıarks, to be resumed at a future day.

ORIGINAL ARTICLES.

STRONGYLUS ARMATUS.

By T. F. Winchester, D.V.S., Lawrence, Mass.

(A paper read before the United States Veterinary Medical Association).

In presenting this subject to you, I do not want to coney the idea that it is a new subject, or of recent origin. I ımply desire that it may renew its youth, and to establish ıe fact that this condition does exist in localities other than n the continent. Judging from the literature in English on ıis subject, it has certainly been overlooked, for, with a few xceptions, only cases are reported that are interesting on ccount of their grossness.

Owing to these facts, it has been necessary for me to ob
tain the greater part of the literature from continental authors
Finding that to be the case, I have had the able assistance o
Dr. J. M. Parker, of Haverhill, in order that a part of th
investigation may be original work. To him we are indebte
for several original drawings, the enlarged plates from Neu
mann, mounted specimens, revised description of the parasite
besides several post-mortem reports of horses that had lesion
due to this nematode.

At this point it might be well to state that in man, accord
ing to Prof. W. F. Whitney, of Harvard Medical School
aneurisms have never been found due to a nematode.

Strongylus Armatus.

Synonyms.—Armed Sclerostome; Sclerostoma equinum
Palissade worm; armed Strongyle.

This parasite is a nematoid of the genera strongylus. Th
term "nematode" derives its origin from the Greek word
"nema," signifying "a thread"; the term strongylus mean
ing round or cylindrical.

History.

A knowledge of these parasites goes back to the seven
teenth century. In 1655, Ruysch discovered in an aneurism
of the mesenteric artery of a horse an innumerable quantity
of small worms, and later he published three or four similar
observations. Schultze, in 1725, Chabert, in 1782, recorded
similar instances, and since then such observations have been
greatly multiplied, principally by Rudolphi, Hodgson, Greve
Rigot and many others, including English and American veterinarians. Bollinger has made an attentive study of this
parasitism, and in following it out has definitely established
its essential points. These verminous aneurisms have only
been found in the equidæ, and, according to Neumann, more
frequent in the ass than in the horse.

Hering asserted that, except in young foals, it is rare to
find a horse without aneurismal dilation, and Bollinger estimated that from ninety to ninety-four per cent. of adult

orses were so affected. They are found principally in the rge mesenteric artery and its branches, although it is found other arteries.

Description of Parasite.

Armed Sclerostome.—Body gray or brown, shaded with ed ; straight, rigid, the anterior part being broader than that hich immediately follows (see Plate 1). Mouth orbicular, idely open, and rendered tense by several chitinous, con- entric rings, the innermost of which are garnished with fine eth, while the outermost carry six papillæ symmetrically ivided. On the outermost ring there is, also, a fringe of hat appeared like long, slender, sharp-pointed cilia ; these e not seen when the mouth is closed ; they are best shown y pressing on the cover glass, and so pressing the air out of e mouth, causing the cilia to spread outward. The six pa- illæ mentioned by Neumann are sharp spicules, and are rved inward, hook-like, and probably serve the purpose of taching the worm to the mucous membrane. The buccal psule is sustained by a dorsal longitudinal line or rib, and s at the bottom two round, sharp plates. Opening out of e mouth is the pharyngeal capsule, which is armed ante- orly, and is funnel shaped, the posterior opening being the naller. The anterior portion of the œsophagus is constrict- l and narrow for about a third of its length, when it begins expand, forming the posterior ventricle or bulb.

The caudal pouch of the male is almost trilobate, the pos- rior ribs being trifurcated, the middle double, and the an- rior cleft. From the anterior portion of the pouch, the icula or male genital organ projects. It is first divided to two equal parts—deferens canals—which afterward unite ward the extremity.

The female, which is much thicker and larger than the ale, has the tail obtuse, and the vulva situated in the poste- or moiety of the body; and is surrounded by a roughened rcular surface of a reddish brown color, which is grasped the caudal pouch of the male during copulation. The erus occupies a large part of the body ; it can be made out very readily by the ova, which are usually present in large numbers.

The eggs are ovoid, and measure 92μ and 54μ broad. The dimensions are variable; sometimes the males are 18 mm. to 20 mm. long, and the females 20 mm. to 26 mm., and at other times it is respectively 26 mm. to 35 mm. and 35 mm. to 55 mm.

The worms are found in an agamous or undeveloped state in blood vessels (Plate II.). In this condition they are covered by a thin, transparent membrane, which entirely covers and closes the still undeveloped worm. It has a temporary mouth and œsophagus, which lead directly into the still imperfectly formed mouth. This worm infests the cæcum and commencement of the large colon, and, with the ascaris megacephala, is the worm most commonly found in the equidæ.

The armed sclerostome holds firmly by the buccal armature to the mucous membrane, which forms at the point of adherence a small, dark prominence. They are frequently met with in couples, the two individuals forming an almost right angle, and adhering so intimately that they may be preserved in this condition in alcohol. Notwithstanding their sometimes considerable numbers, and the irritation they should produce in the mucous membrane, their presence in the horse is rarely betrayed by any appreciable symptom. They have sometimes been accused of causing death by anæmia, diarrhœa, colic, etc.

It is not only on the internal surface of the large intestines that they are met with, for they are found in aneurisms of the mesenteric artery, and in the hepatic, renal, spermatic, occipital and other arteries; in the muscles, pancreas (Goubaux, Montane) ligaments of the liver, and in submucous cysts of the cæcum, and sometimes of the duodenum. In all these instances they are in an agamous state, and represent one of the phases in the development of the species.

With regard to the intestinal tumors, their volume varies from that of the head of a pin to that of a hazel or small almond-nut, according to the development attained by the worm inside each tumor. The latter also contains altered blood or pus, and there is more or less hyperæmia around the circumference. The worm within is rolled upon itself, and is, of course, of variable dimensions, sometimes extremely fine, and never so large as in the adult state; it is always destitute of reproductive organs.

Occasionally there is no worm in the tumor, and then there is seen a small opening at the summit, by which it has escaped. The worms found in the organs mentioned above are also agamous; they represent the primary phase of development, as they do not become sexualized except in the cæcum and colon.

Colin states that the armed sclerostomes are worms which migrate internally, and that their development is effected almost in one place. The ova are deposited in the substance of the intestinal mucous membrane—perhaps in the punctures produced by the mouth of the female, or perhaps merely in the orifices of the glands—and they are hatched there, the embryos becoming encysted at the points where they are hatched, in the cyst developed by their presence.

After being developed and having undergone several moultings, they make their exit from the cyst, and fix themselves on the surface of the mucous membrane; though a certain number remain in their cyst, grow there, have the genital organs partly formed, but nevetheless always remain agamous. Those found in aneurisms and in the peri-intestinal organs, must have entered the blood vessels on their leaving the cyst, and in this way be carried—by a centrifugal migration—to the parts where they are found.

Railliet has shown that this is not the ordinary mode of reproduction and development of the sclerostomes. The ova are expelled along with the fæces, and become hatched in a few days if they are in a damp place. The embryos that issue from them are cylindroid, a third or a fourth of a millimetre long, somewhat obtuse in front, and have a filiform tail. If the conditions of humidity continue to be favorable, they gradually grow, their integument becomes folded and forms a kind of sheath in which the worm moults in an evident manner. Railliet has been able to keep them several months in this state, or after complete moulting. It is at this period that they enter the body of the horse, in the water the animal drinks (or perhaps on green forage), undergo moulting if they have not already done so, and penetrate the substance of the mucous membrane. Leuckart asserts that the embryos should pass through an intermediate host before entering the intestine of the horse. But however this may be, it is possible that after they have lodged themselves in the mucous membrane, a small number of embryos stay to fix themselves in the cysts which they cause to be formed. The majority reach the circulatory system, and install themselves in the abdominal arteries—principally at the origin of the great mesenteric; there they form aneurismal dilations, filled with a ragged clot that adheres to the inner surface of the vessel, and in this helminths are located.

After an indefinite sojourn in the aneurism, the worms leave it by allowing themselves to be carried by the blood, and in the course of time reach the cæcum, where they form the majority, if not the whole, of the submucous cysts. Their last migration is, therefore, in reality, centripetal.

Finally, after remaining a more or less considerable time in the tumor they had caused the formation of, and having grown, the sclerostomes forsake it, attach themselves to the mucous membrane, become sexualized, and copulate.

An interesting observation of Railliet gives support to this theory as to the development of the sclerostomes. He found in a horse a considerable quantity of these worms in the cæcum, verminous cysts in the walls of that viscus, and a smaller number in the duodenum and other parts of the small intestine.

The cysts in the duodenum—which are rare—were grouped on the small curvature of the intestine, and some were even observed disseminated in the mesentery. All of the latter contained sclerostomes still agamous; but several of those in the small intestines, like those of the cæcum, had an opening in their center and were vacant, the helminths having left them. This would seem to prove that the worms had reached the intestines by way of the arteries.

These verminous aneurisms have only been seen in the equidæ—horse, ass, mule and hemione.

According to Semmer, at Dorpat all the foals, without exception, have verminous aneurisms. Mather has witnessed a kind of epizooty break out among foals, consisting of verminous aneurisms of the aorta, near the origin of the renal arteries.

These aneurisms are seen only on certain visceral branches of the posterior aorta, and exceptionally on the posterior aorta itself. In sixty-five horses, Hering has noted aneurism of the trunk of the great mesenteric artery in seven cases; the cœliac artery in fifty-nine cases; the cæcal artery in eighteen cases; the artery of the small intestine in sixteen cases; the small mesenteric artery in two cases; the cœliac trunk in two cases; the hepatic artery in three cases; and in the renal artery in one case. It is not uncommon to find more than one aneurism in the same horse.

In thirty-five horses, Bollinger counted sixty aneurisms; and in adding these to one hundred and eight seen by Hering n sixty-five horses, he reckoned that in one hundred horses there were one hundred and sixty-eight aneurisms, of which one hundred and fifty-three were in the large mesenteric artery and its branches, four in the cœliac trunk, three in the hepatic artery, three in the small mesenteric artery, three in the renal arteries, and two in the posterior aorta. In one hundred horses, ninety to ninety-four had one or more verminous aneurisms. Sclerostomes were also several times found in the spermatic artery, and on three occasions in the erebral arteries. Lastly, Roll indicates them as being found n the vena cava, and, according to Valentine, a specimen was discovered in the vena portæ, at the Berne Veterinary chool.

The young form of the armed sclerostome—the aneurismal sclerostome—is found in various arteries in the horse, nd those of the brain are not exempt. Three observations have been published.

Albrecht reports the case of a horse which, during work, uddenly began to stagger; the eyes were fixed, and the respiration was noisy; there were remissions and relapses. Three hours after the first symptoms appeared, the head was carried low and inclined to the left, and there were convulsive movements of the neck and limbs. Soon it fell on the left side, became unconscious, and manifested complete insensibility. In this state it was killed, and at the autopsy there were found diffuse meningitis, hemorrhagic encephalitis, and in the middle lobe of the cerebellum a sclerostome, which had probably arrived there when an embryo. Van Heill saw a three-year-old horse which was suddenly attacked with furious vertigo, that lasted about a quarter of an hour. An autopsy revealed congestion of the brain and choroid plexus, while a free sclerostome was lodged in the cortical substance of the right hemisphere. Le Bihan found another worm of this kind in the occipital artery; rupture of the aneurism caused the death of the horse in less than ten minutes.

Abildgaard discovered the filaria equina between the dura-mater and the cranial arachnoid of a horse.

The agamous form of this worm has been encountered more frequently in the spermatic than in the renal arteries of the horse. Gurlt had already noticed the presence of these worms in the vaginal sheath. Aitken once saw an armed sclerostome in the spermatic artery of a foal, and Baird found one in the testicle of a horse. Clancy met with thirteen on the surface of the testicle of a three-year-old horse; the gland was indurated, and the envelopes infiltrated. Brodie published a similar case. At the London Veterinary College one worm was found in the spermatic artery of the ass, and another in a funiculitis consecutive to castration.

It is remarkable the frequency with which these worms occur in the abnormal testicles of horses affected with abdominal cryptorchidism. We met with a case of this kind in May, 1883, and Simonin and Jacoulet encountered three in the space of two months, the testicles having undergone fibrous degeneration. On incising the testicle of a cryptorchid which was normal in structure, Degive met with an armed sclerostome. It would be interesting to ascertain the relation in frequency between cryptorchidism and testicular parasitism. What is certain, is that the concealed testicles of horses affected with abdominal cryptorchidism often exhibit such alterations as fibrous tumors or serous cysts.

In stallions affected with hydrocele, Schmidt and Pottinger have remarked one or two specimens of this worm in the vaginal sheath. Their presence is easily explained by the communication that exists between the abdominal cavity and that sheath.

Pathological Anatomy.—The verminous aneurism is usually fusiform, sometimes globular or cylindroid. Its average size is about that of a walnut, though it may not exceed that of a pea, or it may attain the dimensions of a man's head.

It consists of a dilation of the affected artery, with hypertrophy of its walls. The dilation is sometimes absent, notwithstanding grave thrombic lesions in the vessel. (Durieux.)

The external tunic is usually thickened, and variably indurated, according to the age of the tumor. It adheres firmly to the neighboring parts, and is more or less confounded with the connective tissue.

The middle tunic is always hypertrophied, and sometimes very much so. Its thickness—which is ordinarily about a millimetre—may attain, and even exceed, two centimetres. At one time this thickening is due to simple hypertrophy of the tunic; at another time it is owing to inflammatory phenomena, with atrophy of the muscular fibres.

The internal tunic is nearly always altered. It may present every degree of endarteritis, and of regressive metamorphosis—from partial thickenings, and a white, milky tint, to ulceration, atheromatous transformation and calcification; the latter, however, is always rare, and may exceptionally assume an aspect of real ossification.

In the interior of the aneurism there is usually a fibrinous deposit—a thrombus—always adhering, though to a variable degree, to the internal membrane. It is more or less regular and consistent, and partially blocks the vessels; but there is always a canal in the middle of the passage of blood. This thrombus is often prolonged in the artery beyond the aneurism, both before and behind; and its external layers are capable of becoming organized and undergoing softening. Its formation is essentially connected with the presence of the worms, the inflammatory processes, ulcerative and regressive, in the internal tunic and the dilation of the vessel. Decroly has published a remarkable case, in which the alteration in the aorta extended from the heart to the lumbar region.

In the aneurism, worms are found in nine cases out of ten; their average number is from 9 to 11, and varies between 2 and 121. When they are absent, the lesions have a chronic character; but when they are present, then these are more or less acute. The parasites are young, armed sclerostomes. They are rose-tinted, and their average length is from 1 to 3 cm.; their sexual characters are already well defined, but their genital organs remain rudimentary. They undergo one moulting in this situation, in which their buccal armature assumes its definite characters. Rayer and Diesing, who erroneously considered them as a distinct variety, named them, the former, the strongylus armatus minor, and the latter, the sclerostoma armatum aneurysmaticum.

Amongst the aneurismal sclerostomes, some are almost free in the cavity of the artery; but the majority are more or less concealed in the layers of the thrombus, the head or tail usually projecting into the blood stream. They are also found in the hypertrophied walls of the artery, in either the internal or middle coats, or between these two. Sometimes nothing is found of them except the integuments they left after their final moulting.

The gravity of verminous aneurism is due to the risk of rupture of the vessels, and more especially, as Bollinger has pointed out, to their influence on the frequency and seriousness of colics.

The clot formed in the interior of the great mesenteric, or other arteries liable to these aneurisms, may throw off one or more fragments, which are carried by the blood, and constitute so many embola in the arterial ramifications passing to the intestine. According to the size of the embolus, the obliterated artery is itself more or less voluminous, and the disturbance set up more or less serious; there is sudden anæmia r ischæmia of that portion of the intestine to which the artery s distributed, and consequently paralysis of one or more of he sections of the digestive tube, the secretions and movenents of which are suspended. Cohn and Panum have shown xperimentally, in fact, that such are the results of embolism f the great mesenteric artery. The ischæmic portion of the ntestine becomes at first pale, then of a dark-red color; the nucous membrane is swollen, there are hemorrhagic infarcts, erous exudates, ecchymoses, and sometimes a considerable ncrease of the organ in volume.

These phenomena, which are almost immediately consecuive, are related to the total absence of pressure in the capilaries of the artery, and even in the venous trunk succeeding hem, as far as the next veinule, where the circulation can go n freely. The blood flows from this point towards the capllaries, where the tension is nearly nil, and soon causes enorgement, and even small hemorrhages. In consequence of ll this disturbance, there are colics, which rapidly disappear the obstructed artery is of small calibre; for the collaterals oon supplement it. The duration of these colics depends pon the facility with which this collateral circulation can be ffected. It is sometimes easier in a large branch nearer the runk of emergence, and this explains why an attack of colic hat appears very serious will quickly disappear.

Otherwise, the establishment of the collateral circulation lays an important part in the post-ischæmic hyperæmia; and is collateral or compensatory hyperæmia is related to the crease of blood pressure in the vessels adjoining the obliterted one, as Feltz has shown. When it does not produce ireparable lesions the equilibrium is quickly restored, and all ouble disappears.

The circulation disturbances of the intestine cause a local aralysis in it, stagnation and consequent fermentation of its ontents, with an abundant production of gas. The enteralgia duced in the healthy portions causes energetic contractions, hich frequently lead to volvulus and invaginations. Friederger and Frohner have often observed the rotation on its xis of the left part of the large colon—that is, its free portion, which is, of all the intestinal divisions, the most liable to thromboses and embolisms. Paralysis of the intestine often bring about rupture of it, the stomach, or the diaphragm, owing t fermentation and enormous accumulation of matter and ga therein.

In animals which have been cured of colic for some time old lesions in the form of thromboses are often found in th branches of the great mesenteric artery, as well as in the co responding veins, these vessels being partially or totally obliterated, and around them pigmentation of the peritoneum an other organs is usually observed. Bollinger says that on square centimetre of surface, there are sometimes found fiv or six arterioles or veinules so obliterated.

At the autopsy of horses which have died from colic, it i often difficult to discover the obliterated artery and the sea of the embolus, because of the great development of the intestinal vessels, and more especially on account of their congested conditions; so that care and patience are needed i this search.

The effects of the aneurisms, the thromboses, and the embolisms, are evidently subordinate to their situation. Th presence alone of the aneurism and its clot reduces the calibre of the great mesenteric artery, and consequently diminishes the supply of blood to the intestine; this is sufficient t explain the chronic indigestion troubles observed, and thes effects are all the more marked if the diminution in the lume is extended to a ramification, but they are especially so if th vessel becomes completely obstructed by a detached fragment of the thrombus. But as the arteries of the small intestine anastomose freely by inosculation close to the concav curvature of the organ, embolism of one of the vessels i never a fatal accident. It is the same with obliteration of on of the two cæcal arteries; for the other, which anastomose with it near the point of the cæcum, can assume its function so that the attacks of colic pass off. But if the trunk of th right fascicuus of the great mesenteric artery is completel obstructed, the cæcum does not receive any blood, and deat quickly ensues. The large colon receives its blood by th wo cœlic arteries, which have an independent origin; so that seldom happens that both are blocked at the same time. he floating colon would be exempt from the danger of aneuismal embolism but for its first artery, which is derived from e great mesenteric; the other arteries arise from the small esenteric, in which aneurism is rare.

In cases of death from aneurisms, the alterations described bove are most frequently found. There may also be rupure of a verminous aneurism and abdominal hemorrhage. ut, as Freidberger and Frohner[1] have remarked, embolic olics may terminate in death in twelve to twenty-four hours, d before serious intestinal alterations have had time to ocur. The intestine is, in such cases, usually very distended y gas, and obstructed.

Verminous aneurisms rarely give rise to characteristic mptoms, and their presence is often only recognized when pture has taken place, which rapidly terminates in death om internal hemorrhage. On the occurrence of this accient, which coincides ordinarily with a severe effort, the anial crouches or sits on its hind quarters, knuckles over at the tlock joints, and falls as if struck with paraplegia; the pulse thready, limbs cold, visible mucous membranes blanched, c.; and, generally, the last moments of life are marked by gns of profound and violent suffering. Aneurisms of the rta appear to be more liable to rupture than those of the eat mesenteric artery. As a rule, the blood flows into the ritoneal cavity, but sometimes rupture takes place directly to the intestinal canal. In eighteen cases collected by Bolger, fifteen were of rupture into the abdominal cavity, and ree into the intestine. The latter result might be recogzed sometimes from the presence of blood which impregtes the fæces passed before death. Rupture of verminous eurisms is attributable to the feeble resistance of their walls which have lost their elasticity and contractility—and to e increased arterial pressure, resulting from diminution in e lumen of the vessel.

Besides the cases of rapid death, there have been noted— symptoms of aneurism of the posterior aorta—decrease in vigor of the animal, stiffness in movement of the hind quarters, difficulty and pain in micturition, arching of the loins, infiltration and intermittent lameness of one or both hind limbs, cramps, and signs of paraplegia; but these indications are not sufficiently characteristic to afford a sure diagnosis, though they may arouse suspicions, which will sometimes be confirmed by a rectal exploration.

Attacks of colic are the most frequent signs of verminous aneurism, and are the consequence of embolism in the branches of the diseased vessels, but neither are these symptoms characteristic. Sometimes the colic is sudden and acute, and disappears in a short time, to reappear after a variable interval; it depends upon local obstruction, which is soon compensated for by neighboring anastomoses and is usually ascribed to indigestion, as there is no appreciable cause. In other cases the colics are sub-acute and a little painful, and are due to sudden paralysis of a portion of the intestine. Death soon follows, or the disease runs a chronic course, and is characterized by difficult digestion, constipation alternating with diarrhœa, slight colic, some fever, and a capricious appetite. It is a kind of intestinal catarrh that may continue for days or even weeks, and terminates either in recovery or, which is more frequent, by marasmus, cachekia and death.

Lastly, in some cases, the embolic obstruction of the small arteries of the intestine, when often repeated, ends in hemorrhagic enteritis, to which the animal succumbs in several days or weeks. Friedberger and Frohner attribute to this state the following symptoms: Diminution of appetite or complete inappetence, increased thirsts, and rare defecation; the fæcal pellets are small and dry at first, then become soft, pasty, and, later, sanguinolent and fœtid; the urine is acid, and rich in phosphates; the fever is intense and persistent, and the pulse small and quick; the general debility increases, the animal becomes emaciated, and the abdomen retracted, and now and again there is coma. Frequently, after feeding, there is general aggravation of the symptoms and colic. Death is often ushered in by febrile paroxysms, muscular remors, shivering, coldness of the limbs, pallor of the mucous nembranes, quickened, difficult, and rattling respiration, tunultuous beating of the heart, and considerable elevation of he rectal temperature.

To sum up, colics, which have their origin in disturbance f the circulation, have no particular signs which would allow hem to be distinguished with sufficient precision in the comlex group of abdominal complaints.

During the series of years that I have been in practice, he subject and treatment of colic in horses has been most nsatisfactory to me, and the literature of our text books vould not satisfactorily come to my aid. Why, I have often sked myself, do horses become subjects of colic? Why do hey, as a rule, become more severe until the last when they ie? Why is it that the usual stereotyped colic drench or olus will relieve, and then again it does not produce any imression whatever, apparently? Why is it that a case of colic ecovers without any notice being taken of it?

Knowing that there is never an effect without a cause, I egan to make my post-mortem examinations with more care, nd open some of the leaves of the book of nature that I had een in the habit of passing over. The result of this closer bservation revealed to me the fact that the vessels supplyng the intestines with blood were frequently abnormal and howed aneurisms. Opening these dilations, I found parates, nematodes, and, by referring to Cobbold, found that hey were well known.

The question then presented itself to my mind, are we, as body of practitioners, less observing than those gone before s? Do we look wise, give a decided opinion upon some very-day occurrence in practice with the positiveness as robably has been done in colics, and know as little about the ause and lesions produced? Are we not, as a body of veteriarians, more inclined to open the book of charges than that f nature? Do not think for a moment that I would in the ast underrate the worth, or honesty of, the members of this rofession. I think the fault lies, if there is any, with the uthors of our standard works. In this particular instance the subject cannot be said to be spoken of at all, and in one instance, the author, in referring to it, states that it does not occur in this country (England), although it appears quite frequently in Germany.

In referring to the journals of the present day (in English) one can almost count the articles on this subject on his hand, and that being the case, I came to the conclusion there must be a few veterinarians that are not aware of the importance of this subject.

The examinations and investigations I have made in this subject, with the able assistance of Dr. J. M. Parker, of Haverhill, only again very forcibly brings to my mind the fact that we must not take too much for granted, but make original inquiry for ourselves. It is not necessary that all the work shall have to be done with the microscope. It is not a fact, that in making post-mortem examinations we only look for a condition that, in our opinion, would cause death, and never once think enough about it to look and try to find out if there is a tangible cause for the effect produced. How often have we made a post-mortem examination and have been unable to find lesions that would satisfactorily explain the cause of death, when, possibly, by a closer examination, the cause might have shown itself?

Certainly there must be cause for this laxity in our post-mortem examinations, and I am inclined to think that, perhaps, the principal cause may be laid at the door of our instructors, in a great many instances; but oftentimes the pressure of business is the cause.

Can we afford to allow the coming generations of veterinarians to look back upon us as not having the same powers of observation as the generation gone before us? Why is it that the Continental literature is so much more instructive than the rest? The articles on record regarding this malady are interesting, but, with the exception of Dr. W. L. Williams, they are confined to unusual cases, where the parasites are very numerous, or the lesions gross. In Dr. W. L. Williams' article the several cases he cites are in animals that had been in pasture and the season wet, thus favoring, according to the available life history of the S. armatis, the development of the worms. From my observation, it is not necessary that the animal should have been in pasture in order to harbor this worm, or at least within a few years. I am of the opinion that in the larger majority of deaths from colic, there will be found in the blood vessels evidence of, or the parasite itself.

It is not to the exceptional cases that I desire to call your attention, but to those of every-day occurrence.

The following cases may be of interest at this point as giving direct evidence, in my opinion, that the worm in question does produce lesions that are a cause of embolism. That the parasite is a cause of altered nutrition, and in many cases the cause of death.

I will also cite several cases from the pen of Dr. Parker, which, I think, sustains the opinion taken on this subject:

1. *History.*—Brown gelding, ten years, one thousand pounds, same owner for two years, never sick before with present owner.

Found the animal with abdominal pain, sharp and intermittent. Urine free, fæces scant. Looks round to the flank continually. Eructation of gas from stomach. Treatment would relieve for a while, but after twelve hours sickness he died.

Post-Mortem—twelve hours after death. Bloated; dark-colored serum escapes from the abdomen when opened. The arge intestines normal in color, but distended with gas; mall intestine black for a distance of about four feet, due to twist; rest of the viscera normal. On opening the anterior mesenteric artery, found a thickening of the intestine, with a new growth, ragged, in which were found worms.

2. *History.*—Brown gelding, 6 years, one thousand four undred pounds. This animal has been subject to fainting pells during the last four months. He would fall down, lay few minutes, get up apparently all right, and resume his work for several weeks or days.

This day he went to work apparently well, but soon man-ested pain, which gradually increased, with periods of ease, ntil noon, when death ensued.

I found this animal bloated, in severe pain, pulse and respirations hurried and short. Treatment did not produce any apparent relief, except for a short time.

Post-Mortem—four hours afterwards. Bloated; serum escapes when abdomen is opened; the small intestines dark blue, the large black; the veins of mesentery and intestines filled with blood; the mucous membrane of intestines black with blood; the sub-mucous membrane filled with straw-colored serum; the duodenum was contracted on itself for about eight inches, beginning at pyloric orifia; the thoracic cavity contained considerable clear serum; also the pericardium, which had spots of lymph on its surface; the endocardium dark-colored, with apparently calcareous deposits in its substance and on the valves. The superficial blood vessels of the brain were filled with blood; the third ventrical contained some light-colored serum, and its plexus was hyperæmic; the anterior mesenteric artery was the seat of an aneurism, the walls being thickened, the intima showing a new, ragged growth, which nearly filled its space, and was the seat of several nematoids.

3. *History.*—Grey gelding, 18 years, one thousand four hundred and fifty pounds. This horse has been subject to attacks of colic during the past three or four years, and would respond to the ordinary treatment readily. Killed on account of lost usefulness.

Autopsy—immediately after death. Melanotic tumors under tail and along the posterior aorta. Apparently calcareous deposits on the left valves of heart; otherwise, so far as I could see, was in a normal condition.

Dr. J. M. Parker, of Haverhill, reports the following:

4. *History.*—Black gelding, one thousand four hundred pounds. Was called at 3 P. M. Found horse thrashing and sweating profusely and in great pain; temperature 100° F. pulse weak, and difficult to get, but about 80 to 90 per minute ears and limbs cold; membranes pale; eyes wild and anxious prognosis unfavorable. Applied hot packs and gave morphia Temperature gradually rose to 102° F.; pulse more weak and rapid; he breathed hard, and sighed occasionally, and

trembled, but did not attempt to lie down. These symptoms gradually grew worse, until 8:30 P. M., when he died.

Autopsy.—Body tympanitic; abdominal cavity contained a quantity of serous fluid; mesenteric blood vessels filled. Small intestines were, in places, almost black in color; the serous membrane showed numerous hemorrhagic spots. The serous membrane of the colon, in region of large blood vessels, showed exudation and extravasation of blood and serum. The mucous membrane was easily torn, and almost black in color, with an exudate of lymph in sub-mucous coat. Thorax and pericardial sac each contained considerable quantity of serum, but seemed otherwise normal. Aorta: The intima was of an even red rose color, and on opening the anterior mesenteric artery several warty excresences were found, loosely adherent to the intima. The walls were much thickened, and when cut open a large clot was exposed, and entangled in the clot were several nematoids. The intima of the artery above the clot was of an even red color, while immediately below the clot the membrane was seemingly normal in color.

5. *History.*—Black gelding, sixteen years; ten hundred and fifty pounds. For past two or three years, after having done extra work, he would leave his feed, and in course of a week or ten days would again be of service. This A. M. showed symptoms of abdominal trouble, with acute pain, hurried respiration and quick pulse. He did not get any ease during his sickness, and at times was almost uncontrollable. The duration of sickness was twenty-four hours.

Post-mortem—twelve hours after death. Bloated; dark-colored serum escapes from abdomen when opened. Mesentery dark; both the small and large intestines were dark in color and the mucous membrane of the same was very soft and dark. The contents of intestines very pungent. Kidney was soft; liver dry and hard; thorax contained quantity of dark fluid; muscles of heart soft and easily torn. Intima of posterior aorta deep rose color. No evidence of strongylus armatus found.

6. *History.*—Black gelding, twelve years; eleven hundred

and fifty pounds. Been subject to colic for some time Called at 4 A. M. Found him bloated, cold sweat, mucous membrane pale, pulse fast and hard, respiration quick and labored. Died at 9 A. M.

Autopsy at 4 P. M. Bloated. Serous coat of intestines dark blue, and blood vessels of mesentery and intestines filled with blood. Mucous membrane of large intestines apoplectic with exudation of serum into the sub-mucous membrane. Rest of viscera apparently normal. Found aneurism of anterior mesenteric artery; walls thickened; the intima showed a new foundation, ragged in appearance, which harbored several worms, and dark-colored clots of blood were found below the thrombus.

7. *History.*—Bay gelding, twelve to fourteen years; eleven hundred pounds. Sick all day, not much pain, uneasy. At 8 P. M. pulse 36, respiration 18. Slightly bloated, easy passes flatus. No fæces morning since. Gave usual treatment and went away. 4 A. M. night man was awakened; went to the horse, died soon after.

Post-mortem, 11 A. M. same day. Bloated. Removing abdominal muscles, large quantity of dark-colored serum escaped, undigested food around liver and stomach and small intestines. Stomach with small rupture, the edges rough, having clotted blood under external coat of stomach. Small intestines were blushed and contained a quantity of light-colored mucous, sweetish to smell. The M. M. B. of large intestines, colon and cæcum, were apopletic, and fæces fluid. Liver soft and friable. Rest of viscera apparently normal. The internal lining of anterior mesenteric artery thickened, and presented a cauliflower look, covering a space of about a quarter of a dollar, which had in its meshes several parasites. Growths were found on biscuspid valves, hard and glistening.

8. *History.*—Brown gelding, nine years; eleven hundred pounds. Taken sick 1 A. M. Saw him 3 A. M., and found him bloated, dull pain, up and down. Pulse small, hard and 72. Respiration labored and short, cold sweat, visible M. M. B. pale. Usual treatment, with relief for a while, but gradually failed, until death ensued at 8 A. M.

Post-mortem at 4 P. M. same day. Visible M. M. B. pale; loated; mucous discharge from nose and mouth. Opened bdomen, found peritoneum itis. The colon, serous coat dark lue; mucous coat apopletic. Small guts, serous coat dark color, mucous membrane normal. Rest of viscera appar- ntly normal. Left side of heart contained a straw-colored lot Anterior mesenteric artery aneurismal, containing a auliflower growth with several small parasites, and beyond is found a firm, dark-colored clot filling artery.

This horse was taken sick with colic the fifth; recoverd, ent to work the sixth, but had to be returned in a few hours; e ninth he again resumed his work, and continued appar- ntly all right until the morning of the twelfth, when he died above stated.

9. *History.*—Bay gelding, five years; ten hundred and fifty ounds. Saw case at 6 P. M. Pulse full, strong; respiration a ttle hurried; urinates freely, fæces plenty. Restless, up and own. Prescribed for him, which gave ease for a while. 9 P. .—Bloated; gave drench, slacked away, and remained easy r a while, but continued in dull pain. 1 A. M. the next day, eathing hard and fast, sweating profusely; again relieved m and he remained comfortable until about 10 A. M., when repeated the treatment which rendered him comfortable til 4 P. M., when he had a collapse without bloating. Again d my best, which caused him to remain quiet until 4 A. M. the following day, when he threw himself down, pounding s head and striking with fore feet, while the hind legs re- ained very stiff until a short time before death, which took ace at 7 A. M. the same day.

Post-mortem—thirty hours after death. Bloated. The ab- minal viscera, with the exception of about eighteen inches small colon, were apparently normal. That part of the gut as inflamed and the contents dry. The M. M. B. of cæcum as well covered with dark, raised spots, and contained quite number of parasites.

One of the branches of the anterior mesenteric artery con- ined a growth on its internal surface, which nearly filled its ace, and in and around this was found parasites quite active.

10. *History.*—Brown gelding, six years; fourteen hundre pounds. Taken sick about 5 P. M. Saw him at 6 P. M. Foun discharge of undigested food from both nostrils; anxious expre sion. Pulse full, about 80. M. M. B. of eyes and mouth pal Breathing short, cold sweat, no bloating to be seen. 8 P. bloated; hurried, short breath; pulse imperceptible; cold M. M. B. of eyes still pale, that of mouth regained colo stands up braced. Tapped; no relief given. Died at 9 P.

Autopsy next day at 11 A. M. Bloated; part of small colo protruding from anus; opened abdomen, escape of blood serum and undigested food. Vessels of mesentery full blood, those of small intestines enlarged. Colon and cæcu apparently normal, as well as kidney, spleen and liver. Ston ach ruptured, with blood and serum under torn edges. Th stomach contained quite a number of bots. Small intestine except part of duodenum, full of bloody serum. Large inte tines, contents semi-fluid. Cæcum contained quite a numb of parasites (S. armatus). Rest of viscera apparently norma The posterior aorta rose color inside, and clots of blood whe anterior mesenteric artery given off. Anterior mesenter artery contained a ragged, new growth, with walls thickene but did not find a parasite.

11. Report of cases from the note-book of Dr. J. M. Parke

Was called June 6th to see a case of colic, and found hi presenting the usual symptoms, and no history of having b fore had colic, He was under treatment for eight days, wit days of ease and apparently convalescing, but death ensue the 15th inst. Autopsy the following day.

12. Roan mare. Not subject to colic; taken on the roa was very violent, and lived about four hours.

Autopsy forty-eight hours after. Portions of small inte tines almost black in color; blood vessels filled. Walls anterior mesenteric artery thickened and roughened, wit blood clot, with aneurismal dilation about the size of a hen egg, and entangled in the clot there were several nematod (S. armatus). No bloating; opening the abdominal cavit there was a good deal of post-mortem discoloration. Bowe were full of watery fæces. Mucous membrane was excoriate

nd much inflamed. Diaphragmatic flexure of colon was
dherent to abdominal wall, where there was a patch of in-
ense red discoloration, and in the centre was an abscess open-
ng into the walls of the colon, and containing two or three
unces of creamy pus. On examining the aorta and anterior
esenteric artery, there was a clot and aneurism of the cœliac
ranch of the anterior mesenteric. The cœliac artery was full
f dark-colored blood, and about eight inches down a nema-
ode was found (Filaria papillosa). Immediately below this
here was a long, slender, straw-colored ante-mortem clot.

Dr. C. W. Stiles reports on the Filaria papillosa as follows:
This parasite is the F. Equinæ (papillosa) female. As a rule,
he nematode is found in the body cavity, but is quite fre-
uently found in the peritoneal cavity, more rarely in the
leural cavity, of the horse, mule and ass. Generally, only a
w specimens are found in one host; occasionally, however, a
rge number are found. The female are much more fre-
uent than the male. The same parasite has also been re-
orted from the arachnoid, sub peritoneal connective tissue
nd diaphragm, and the nematodes found in the eye are
ought to be embryos of this species."

Baruchello also believes that the nematodes found in the
utaneous helminthiosis of the horse also belong to this
pecies.

Kavanagh mare. Taken suddenly sick about 2 P. M. with
atulent colic. Remedies such as chloral hydrate and arom.
pt. of ammon.; later, used turpentine and linseed oil, and
arbolic acid, with rectal injections of linseed oil and trocar
nd camila; diagnosed twist of bowels. She died about 7:30.

Autopsy held next day. Showed abdominal viscera fully
istended and tympanitic; not much inflammation; no peri-
nitis. In one place on intestines there was a small patch of
æmorrhagic inflammation. The gastro-splenic omentum was
ntensely inflamed and dark in color. Lungs slightly con-
ested; heart distended full. On opening intestines they
ere found to contain a quantity of liquid fæces. Stomach
as distended and contained gas and fermented food. Spleen
as enormously distended, capsule tense almost to bursting.

This distension was especially well marked at the apex, wher
it was full to bursting. It was here that the gastro-spleni
omentum was dark red in color and intensely injected. O
opening the posterior aorta the cœliac axis contained a quar
tity of clotted blood, and in one of the branches the intim
was thickened and roughened in places. and adhering to an
partially concealed by the roughened intima, there were se
eral nematodes. The anterior and posterior mesenteric arte
ies were normal.

13. On August 12th I was sent for to see a mare which
found suffering a good deal of pain, and presenting all the symp
toms of acute lymphangitis. Temperature, 101½° ; pulse har
and full, and about 60. Gave linseed oil, with belladonæ an
veratrum viride, and ordered continuous bathing with ho
vinegar and water, and soap and camphor liniment.

The next day I got word that she was better; was eatin
better and seemed brighter, and the swelling was much re
duced.

The same evening I got word to come out at once, as th
mare was down, unable to get up, and was thrashing badly
I found her lying on her sore leg, trying to get up, and be
coming almost frantic in her endeavors. I at once turne
her over on the other side, when she got up with a little dif
ficulty and at once began eating hay, and whinnied whe
water was brought.

The following morning, much to my surprise, I receive
word that she was dead, and I immediately went out to mak
an autopsy.

Autopsy. I found body tympanitic, swelling in leg muc
reduced. Owner said she died easily, without struggling
so much so, that, although he was in the same barn, he di
not know she was dead till he went in to look at her. O
opening the abdominal cavity, there were no lesions to b
observed in the abdominal viscera, except one small patch o
redness, with a few hæmorrhagic spots at the pelvic flexur
of the colon. Thorax: the lungs were dark-colored and con
gested; the heart full on both sides. In the anterior mesen
teric artery there were two aneurismal dilations, and in then

ere were several specimens of the strongylus armatus. In e sub-mucous coat of the cæcum there were several well- arked prominences, and through the thin membrane the iled-up worm could be distinctly seen. Through want of ols and time I did not take out the brain.

14. Horse belonging to American Express Co., aged ; died ddenly on the street while working ; (the day was cool and udy ;) the horse fell down "all in a heap," with his legs der him ; it got up again, but it immediately fell, and died thout a struggle.

Autopsy held next day, eighteen hours after death. Body mpanitic, abdominal organs normal, no parasites in intes- es ; lungs congested, heart empty, muscles dark ; aorta. rmal ; kidneys, normal ; on the base of the brain around pons there was a quantity of congestion and effusion. In third ventricle, there was a teaspoonful of serous effusion. e blood vessels in and around the vermiform process and lateral lobes of the cerebellum were intensely congested ; strongyles were discovered.

Post-Mortem of Horses Found at the Knacker.

Brown gelding ; aged ; killed ; S. Armatus abundant in cum ; aneurism, anterior mesenteric artery with worms.

Gray mare, over drove ; died of exhaustion ; no evidence S. armatus in cæcum ; small aneurism, anterior mesenteric ery, but no evidence of parasite there.

Owner unknown ; died of colic ; apoplexy of large intes- es ; S. armatus plenty in cæcum ; anterior mesenteric arte- aneursmal, with worms.

Bay gelding, old owner unknown ; died of colic ; aneu- n post aorta at point where anterior mesenteric artery en off, size of a large pear, involving anterior mesenteric ery, with thrombus and strongyles present, and one of di- ging arteries completely plugged ; no S. armatus found in um.

Bay gelding, killed for lost usefulness ; strongyles in cæ- ; aneurism anterior mesenteric artery, with thrombus strongyles.

Gray gelding, died from effects of heat; no evidence o parasite in question.

Mr. Mather, M.R.C.V.S. in *Veterinarian* for 1857, Vol XXX., page 190, writes as follows:

“About twelve months since, when practicing in th South, the following cases came under my notice, and neve having read in any of our veterinary works, or heard mention made, of such a disease (excepting that veterinary surgeons had occasionally met with it), I thought perhaps yo might deem the following particulars not unworthy of a plac in the *Veterinarian.*

“It was thus only by chance that I was enabled to lear the nature of the complaint the animals were laboring under and that in the following manner: The subjects of the disease were blood foals varying in age from seven to sixtee months, and one of them having been found dead in the field I was sent for to make a post-mortem examination, it bein suspected that the animals had been poisoned. On examining the foal previously to opening it, I found the body to b very much emaciated, and that the abdomen was greatly enlarged. On percussion of the belly, I detected the presenc of a small quantity of gas, mingled with a fluid which I concluded was of a serous nature. From this circumstance, came to the conclusion that the animal had died from ascites but on opening it, I found the abdomen to contain quite gallon of pure blood. On removing the viscera, I at onc saw that the hemorrhage had come from a rupture of th posterior aorta, just in front of the renal arteries. I dissected out the vessel to nearly its whole length, and on examining it, I thought at first that simple aneurism existed; but o cutting into dilated portion, near to the rupture, I found much to my surprise, that the vessel was completely choke with myriads of small worms, similar in appearance to th filaria which we find in the bronchial tubes of calves sufferin from bronchitis or husk. The internal coat of the vessel wa considerably thickened; in fact, it appeared to be lined wit a false membrane, which, no doubt, had been caused by th irritation set up by these creatures. In all of the arterie ven off the main trunk were more or less of those parasites.

" About a fortnight from the time of being called to
is case, I was sent for to see another of these foals, which,
e man informed me, had been found down and unable to rise.
n examining it, I observed that the pulse at the jaw was
arly imperceptible, the mucous membranes blanched, and
e body very cold. I informed the owner that I was sure
e foal was dying from internal hemorrhage, and that, in my
inion, it was suffering from the same complaint as the last.
e managed, however, after some difficulty, to get the ani-
l on his legs again, and immediately we had done so, it
mmenced voiding a large quantity of blood from the penis.
eing that there was no chance of recovery we had the foal
stroyed, when I made my examination and found the blad-
r distended to repletion with blood. The right kidney was
ice its normal size, and on cutting into it I found it filled
th similar parasites. The renal artery was quite as large
one's finger, and it, also, contained a large number of these
atures. The posterior aorta contained thousands of them.

" Two other foals, which were on the premises, I felt sure
m their appearance were laboring under the same com-
int, and the owner wished me to try if I could do anything
them.

I must here say that these foals had been taken off the
res at about six months old, and placed on some cold, wet
ds, where they had remained up to the time of my seeing
m.

" The two surviving ones I had taken up and put into the
of a barn, so that they could be supplied with crushed
s, pea meal, and good hay. I first gave them, for three
cessive mornings, ol. tereb., ol. lini., and afterward admin-
red for a few days the following tonic—ferri sulph., pulv.
t. These remedies were alternately employed for a fort-
ht, and I considered that the animal was improving under
ir use, but at the time the owner saw fit to dispose of the
ls, so that I afterward lost sight of them entirely."

[EDITOR.—Mr. Mather will find in the records of *Veter-*
ry Medicine, several analgous cases to those he has related

They are not uncommon, and have frequently been brough before the notice of the students of the college by the professors.]

Dr. W. L. Williams in his article says:

"How often these parasitic thrombi occur amongst ou horses, we do not attempt to say; we have only looked fo strongyles where they have been expected, and have not bee disappointed in any case. A positive diagnosis is generall available, by manual exploration per rectum, or by pulse, an respirations are more uniformly accelerated than in colic, an there is a peculiar, anxious expression about the animal tha bodes no good, and leads one to conclude that he is dealin neither with ordinary colic nor enteritis."

I think Dr. Williams is right when he says, "we do not kno how often these parasitic thrombi occur amongst our horses." for the reason that there has never been enough careful post-mortems to answer the question. I am not surprised that h finds them so readily when looking for them, for he says, "wher expected they were always found."

I must differ with him when he says a positive diagnosis i generally available, by manual exploration per rectum, o pulse, respiration, and general expression of the animal. I think that, in most cases, the diagnosis follows death, althoug one is justified in expecting the presence of the parasite i the majority of cases that die from colic.

Dr. A. W. Clement, in *Journal Comparative Medicine an Surgery*, Vol. XIII, page 186, cites a very interesting case o rupture of the anterior mesenteric artery, but here no unusua case present itself.

Dr. J. T. Duncan, in *Veterinary Journal*, March, 1887, cites several interesting cases that do not correspond to the every-day occurrence of the practitioner, although the lesions produced were due to S. armatus.

Dr. R. W. Burke, in *Journal Comparative Medicine and Surgery*, Vol. XIII, has an article on this subject, but does not cite any cases that have come under his observation.

Dr. C. A. Cary, in the same journal, June, 1892, cites two post-mortems of colts that never had colic; one died from etanus, the other was killed on account of malformation, vith aneurisms of anterior mesenteric in both, and living clerostomes. Using these cases for an analogy, he thinks hat the theory of verminous aneurisms causing colic should e more carefully looked into.

Mr. M. Laquerriere, in his article on colic, VETERINARY EVIEW, Vol. IX, page 222, says—"As to the predisposition roduced by a diseased condition of the great mesenteric artery neurism), upon which Zundel places so much weight, we atach but little importance to it. But, on the contrary, we ecognize the predisposition accompanying advanced age."

Prof. F. Smith, Army Vet. School, Aldershot, has a very teresting article in *Veterinary Journal*, for July, 1892, on "Inestinal Obstruction in the Horse," and I fail to find that he akes mention of Strongylus armatus as a cause for the same. Ie does say that "The rapidity of death depends entirely pon whether the blood supply to the bowel is partly or comletely cut off, viz., a partial or complete twist." I am of the pinion that the twist to which he attaches so much importce is a result due to enteralgia, and that due to altered trition of the part. It is a fact that this parasite is not a ranger, but is readily found if looked for, and is a cause of rombosis and embolism.

Mr. Hunting, in discussing Prof. Smith's paper, "held that e impacted food was the cause of the spasm, or the pain, and at the proper thing was to remove the cause, even if they flicted a little more pain." Does not the establishment of llateral circulation to the afflicted parts cause a return of rmal state, and pain then cease, allowing that it is due to an nbolism? Who can make a positive diagnosis of this condion during life?

Mr. H. G. Rogers said he was rather skeptical as to the ndition called twist, for the report came from Knacker in dominal cases—"Twist, sir;" and this is similar to the report om this side of ruptured diaphragm. He thought that slugsh liver and defective teeth were the causes of intestinal obruction.

Prof. Macqueen thought there was another form of ob-

struction which demanded a little more attention than i
usually received, and that was the form of obstruction due t
aneurism of the branches of the mesenteric artery. He sug
gested that more careful post-mortems might reveal a caus
that is often overlooked.

Dr. Wm. Willis, M.R.C.V.S., in *Veterinary Record,* Jul
16, 1892, in criticising Prof. Smith's paper, remarks the entir
absence of any reference to the condition of the circulator
apparatus of the bowels. He says, " I am inclined to thin
mesenteric aneurism is much more frequently responsible fo
the death of our patients than is generally supposed. Ce
tainly, it is not the rare disease of old horses which the scar
notices of our text books might lead one to believe. It is
most common condition. Physiological experiments teach u
that when the blood supply to the bowel is suddenly inte
rupted, violent intestinal movements result, and that, if th
interruption be continued, a paralytic condition of bowel r
sults. I would suggest that the first result is probably th
precursor of twist, and the second is certainly the explanatio
of some cases of obstructed colon.

" How far mesenteric aneurism, thrombosis, and embolism
are likely to give rise to the conditions referred to above, an
to what extent they must be held responsible for the fatal te
mination of many of our bowel cases, is a matter which d
serves more attention at the hands of the British veterinaria
than it has hitherto received."

Dr. Willis cites seven post-mortems; five eight years ol
and under; two more aged. He found six with aneurisms
one of them with strongyles; the other one revealed a pe
fectly round hole about the size of a sixpence, in the side o
the ileum, near ileo-cæcal valve. I am of the opinion, ha
his examinations been made with a little more care, he woul
have found the worm in each case; although not necessaril
at the point of aneurism.

J. E. Miller, M.R.C.V.S., in *Veterinary Record,* June 1
1892, cites an exceptional case of mesenteric tumor wit
aneurism of anterior mesenteric artery.

Cobbold says: So practically important, however, do

eem Bollinger's summary of the whole subject in relation to
e hippopathological aspects of parasitism, that I feel it de-
rable to record his conclusions at full length. No profes-
onal man having any pretentions to a knowledge of the vet-
rinary art—or, for that matter, to parasitism in relation to
nitation—should remain uninformed on this subject. Dr.
ollinger's results are thus stated :

1. The worm aneurism of the visceral arteries of the
orse, existing in 90 to 94 per cent. of adult horses, has a gen-
al correspondence with the aneurisma verum mixtum of
an. It is, however, distinguishable from the same by its
at, cause, character of its walls, contents, and mode of ter-
ination. The worm aneurism arises from a parasitism of
e palisade worm (Strongylus armatus), owing to an inflam-
atory affection of the arterial walls which it causes, and
hich one may describe as a recurrent traumatic endo-
teritis. This holds good for all the visceral arteries, with
e exception of the abdominal aorta, in which an aneurism
ay arise from local increase of pressure.

2. The formation and further development of the aneurism
also favored by the narrowing of the arterial calibre, which
caused by the inflammatory swelling of its walls, and also
the contemporaneous formation of a thrombus (clot), this
tter still further supporting and exciting the inflammation
the inner coat.

3. Whilst the causes above mentioned (and of these more
rticularly the continued presence of the palisade worms
d the plugging of the smaller arteries by thrombi) favor
e growth of the worm aneurism, the small size of the same,
twithstanding the years it has existed, is explained by the
nsiderable hypertrophy of the muscular layer, by the tough
rous capsule formed in many cases by the connective tissue
the mesentery, and by the adhesion of the intestines to the
rpendicular and free-lying anterior mesenteric artery; in
rticular this last named circumstance does not allow of any
ry considerable shortening of the mesenteric artery, which
ould necessarily be accompanied by considerable dilation of
e arterial tube.

4. The favorite seat of the worm-aneurism is the trunk the anterior mesenteric artery, directly at its origin from t abdominal aorta. Most frequently that part of the arter trunk is dilated from which the arteria ilea, cæcales and coli inferior (arteria ileo-cæco-colica) arise, less frequently t arteria colica superior at its origin, and the arteries of tl cæcum and colon in their course in the meso-cæcum and mes colon. The verminous aneurism also occurs in the cœliac a tery (Bauchschlagader), in the posterior mesenteric arte (Gekrosarterie) in the renal artery, and in the abdomin aorta. A horse is not infrequently afflicted with sever aneurisms of this kind at one and the same time. Thus one case (described by Bollinger) there were six of the aneurisms affecting the abdominal aorta and its branches the same horse. The verminous aneurism may occur fro the sixth month of life onwards, and with increasing age; tl number of horses free from such aneurisms becomes conti ually smaller.

5. The aneurism varies in size from that of a pea to that a man's head. The dilation is, as a rule, equal on all side the form being usually thumb-shaped or bottle-shaped, passin into that of a cone or long oval figure. This general config ration is principally due to the free and movable situation the anterior mesenteric artery.

6. In contrast to aneurisms in man, the walls of the wor aneurism in the horse are almost without exception indurate In addition to the mesenteric connective tissue, all the arteri coats, and especially the tunica media, generally take part i this induration. The hypertrophy of the media, which stan unique in respect of what is known of arterial disease, form a compensatory action of the arterial wall, analogous to th muscular hypertrophy of the heart in valvular disease. Th change in the media points to the fact that in the develo ment of aneurism in man the early disturbance of the nutr tive process in the tunica media is not a less essential fact than the degeneration of the tunica intima.

The changes in the intima are the least constant. The present all stages of progressive and retrogressive metamo

sis, from simple induration to ulceration and calcification.
the walls of the verminous aneurism one not unfrequently
ls all the pathological changes exhibited by atheroma in
n. Calcification is a common form of the retrogade pro-
s, and, in very rare cases, may pass on to the formation of
e bone.

7. In addition to the palisade worms, one almost con-
tly finds a parietal thrombus contained in the aneurism.
overs the inner wall either partially or completely, being
he latter case perforated for arterial offshoots. The clot
occlude the artery, and it is not unfrequently continued
the arterial branches (peripherally) or into the aorta
trally). Amongst the various changes that the clot under-
s, organization of its outermost layer and softening are the
t frequent. The constant occurrence of this clot is due to
presence of the worms, to the inflammation, ulcerative
regressive affection of the intima, and to the dilatation of
arterial tube.

. The palisade worms are seldom absent from aneurisms
e horse. Their not being present is merely an accidental
umstance. On the average, nine palisade worms go to a
ninous aneurism, and eleven in the horse. The highest
ber of worms found in one horse reached 121. Not in-
uently, also, palisade worms, or their coverings in the
n of larval skins, are found in the aneurismal walls. The
igration and emigration of the palisade worms out of the
stine into the aneurism, and the reverse, takes place,
ably, as a rule, within the arterial circulation. The path
e worm does not appear to be always the same, inasmuch
ey can also wander through the peritoneal cavity. The
ms found in the aneurismal walls are probably mostly
strayed specimens.

. From a comparative pathological-anatomical point of
, the developmental history of the aneurysma vermino-
proves that a circumscribed endo-arteritis can determine
ormation of an aneurism.

o. Like the worm-aneurism itself, atheroma of the ab-
inal arteries arises from a circumscribed acute and sub-

acute endo-arteritis. The histological changes in the secon
ary atheroma of horses are perfectly analogous to those o
the spontaneous atheroma of man. Idiopathic atheroma, a
seen in man, does not occur any more in the horse than in th
other domestic animals. Atheroma in the horse is alwa
secondary. To be sure, one observes an idiopathic chron
endo-arteritis in many abdominal arteries of the horse, which
however, never exhibits indications of atheromatous dege
eration.

11. In consequence of its position, the worm-aneurism o
horses is not open to physical examination, and, on tha
account, cannot be diagnosed by physical signs; moreover, i
offers no characteristic symptoms. Its termination by ru
ture is extremely rare, the aneurisms of the abdominal aort
being more disposed to rupture than those of the anterio
mesenteric artery. Of eighteen cases of known perforation
fifteen opened into the peritoneal cavity, and thre
into the bowel. The dangerous symptoms of th
worm-aneurism are exclusively due to embolism an
thrombosis of the affected artery, arising from the parieta
clot. The latter becomes especially dangerous through it
increasing size and the softening which accompanies it. Th
absorption and shrinking of this parietal clot, be it organize
or not, is materially assisted by the high pressure to which it i
exposed.

12. The very marked symptoms of vascular obstruction—
the sero-hemorrhagic intestinal infarct—in embolism an
thrombosis of the mesenteric arteries, are easily explained b
paralysis of the muscular coat of the intestine, by the absenc
of paucity of valves in the portal vein, by the readiness wit
which meteorismus (orflatus) arises, especially in herbivora
and by the loose consistence of the intestinal walls of villi.

13. The occlusion of the intestinal arteries, especially tha
arising suddenly, always has for its result a partial or com
plete paralysis of the portion of bowel which they suppl
The palsy of the intestine causes the forward movement o
the intestinal contents to cease, a stoppage of the fæces,
hindrance to the discharge of fæces and gas, and also that ex

edingly dangerous formation of gas (within the intestinal act) which in the herbivora is so abnormal, both quanita- vely and qualitatively.

14. In embolism and thrombosis of the mesenteric arteries e symptoms during life are entirely identical with those served in the so-called colic of horses, as has been de- rmined by numerous observations. The partial paralysis of e bowel, which is brought on by the embolism and throm- sis of the mesenteric arteries, forms in great part the chief d leading feature of the series of symptoms known as the colic" of horses. The palsy of the bowel which arises this ay may explain also the frequent ruptures of the digestive nal and the greater number of its changes in position. The tter are specially favored by the structure of the abdominal scera in the horse.

15. The old changes which one finds in the peripheral anches of the anterior mesenteric artery, in the form expired d partly absorbed embolic and thrombolic processes (pig- entation, arterial and venous thrombi), particularly in con- ction with those arteries which are seats of the aneurism, cisively prove that the large majority of colics resulting in covery, so far as they do not depend upon known injuries, e caused by paralysis of the bowel from embolism and rombosis. The sudden occurrence, course, and result of ese kinds of colics also testify to their embolic origin.

16. The œdematous, inflammatory, and hemorrhagic pro- sses that one often finds described as the cause of death in lic, almost exclusively depend on thrombosis and embolism the mesenteric arteries, the cases forming about forty to ty per cent. of all fatal colics.

17. The rapid course in fatal colics, as well as the pre- nderating symptoms of dyspnœa in cases of recovery, is ally due to the abnormal development of gas in the alimen- ry canal. In addition to the diminution of the respiratory rface by the lofty position of the diaphragm, a direct poi- ning (carbonic acid and sulphuretted hydrogen), probably ntributes to the intensity of the symptoms and the rapid urse by diffusion of the abnormally developed gas out of the estinal canal into the blood.

18. The variety of the anatomical derangements caused by embolism and thrombosis of the intestinal arteries is faithfully mirrored by the variety of the clinical symptoms and the different degrees in the intensity and course of the colic.

19. Amongst every 100 horses afflicted with internal disease, 40 are ill with colic. Among any hundred deceased horses, 40 have perished with colic, and among 100 colic patients, 87 recover and 13 die. The figures prove that neither amongst the epizootic nor sporadic diseases of horses is there any other affection which occurs so frequently, or claims anything like so many victims. Like the frequency of the worm-aneurism, the amount of disease and mortality increases with advancing age. The etiology of the colic of horses finds in the thrombosis and embolism of the mesenteric arteries, with the consequent paralysis of the bowel, an all-sufficient explanation, whilst the causes of colic hitherto accepted were, for the most part, insufficient.

20. In a great number of cases, the thrombus of the worm-aneurism is continued past the mouth of the anterior mesenteric artery, into the lumen of the aorta, and, as such, is the exclusive cause of the embolisms of the pelvic and crural arteries which bring about the intermittent hobblings (the author says "intermitterenden hinken," not "hahnentritten," the usual equivalent term for springhalt). Considering the excessive frequency of the thrombus being continued into the aorta, it becomes highly probable that a great part of the diseases and lameness of the posterior extremities ("Huft und Kreuzlahme, unsichtbarer Spath, etc.," which may be rendered "sciatic and hip or spinal lameness, obscure spavin, etc.,") are due to occlusion of the arteries.

21. Owing to the fibrous thickening of the connective tissue of the root of the anterior mesenteric round the aneurism, and to the considerable size of the latter, disturbances of the innervation of the intestine, (as well as) hindrances to the passage of the chyle, and irregularities in the portal of many chronic disturbances of digestion in horses.

22. Considering the great losses and heavy social disadvantages that are occasioned by the colic of horses to the

orse-breeder, to agriculture, and to the general welfare, it is t the highest importance to discover means which should revent the introduction of the embryos with the food, and, s a consequence, the migration of the palisade worms into ıe mesenteric arteries of the horse.

In calling your attention to this subject, old as it is, I hope have not encroached too much on your valuable time. If I ave been able to cause one of you to ask yourself: Can ıe statements made be sustained by post-mortem examintion?—for I think we have been able to—then, with the ıterest of your profession at heart, I hope you will open the ook of Nature, and determine the fact for yourselves.

EXPLANATION OF PLATES.

Plate I.

g. 1.—Male: *a*, caudal pouch; *b*, spicula.
ig. 2.—Female: *a*, vulva; *b*, anus.
g. 3.—*a*, capsule; *b*, longitudinal line or rib; *c*, anterior teeth; *d*, anterior cilia; *e*, papillæ; *f*, posterior papillary bodies or plates; *g*, anterior armed pharyngeal ring; *h*, pharyngeal capsule; *k*, anterior constricted portion of œsophagus; *l*, posterior ventricle or bulb.
g. 4.—*c*, anterior teeth; *d*, anterior cilia.
g. 5.—*b*, longitudinal line or rib; *f*, posterior plates.
ig. 6.—Anterior cilia.
ig. 7.—Anterior papillæ.
g. 8.—Fine anterior teeth.
g. 9.—Caudal pouch of male; *b*, spicula.
g. 10.—Posterior moiety of female; *b*, anus.
g. 11.—Undeveloped or agamous worm, in thin transparent membrane, which is shed on reaching maturity.
g. 12.—Ovum.

(*These drawings are original, and made by Dr. J. M. Parker.*)

Plate II.

g. 1.—Caudal extremity of the male Sclerostoma equinum (Neumann.)
ig. 2.—Fragments of the cœcum of a horse showing the tumors of different sizes due to the sclerostomes, as well as parasites fixed on the mucous membranes (Neumann.)

Plate III.

ig. 1.—Verminous aneurism of the great mesenteric artery; one-half natural size (Railliet.)
ig. 2.—Abdominal aorta of a horse with its ramifications (Neumann.)

PLATE I

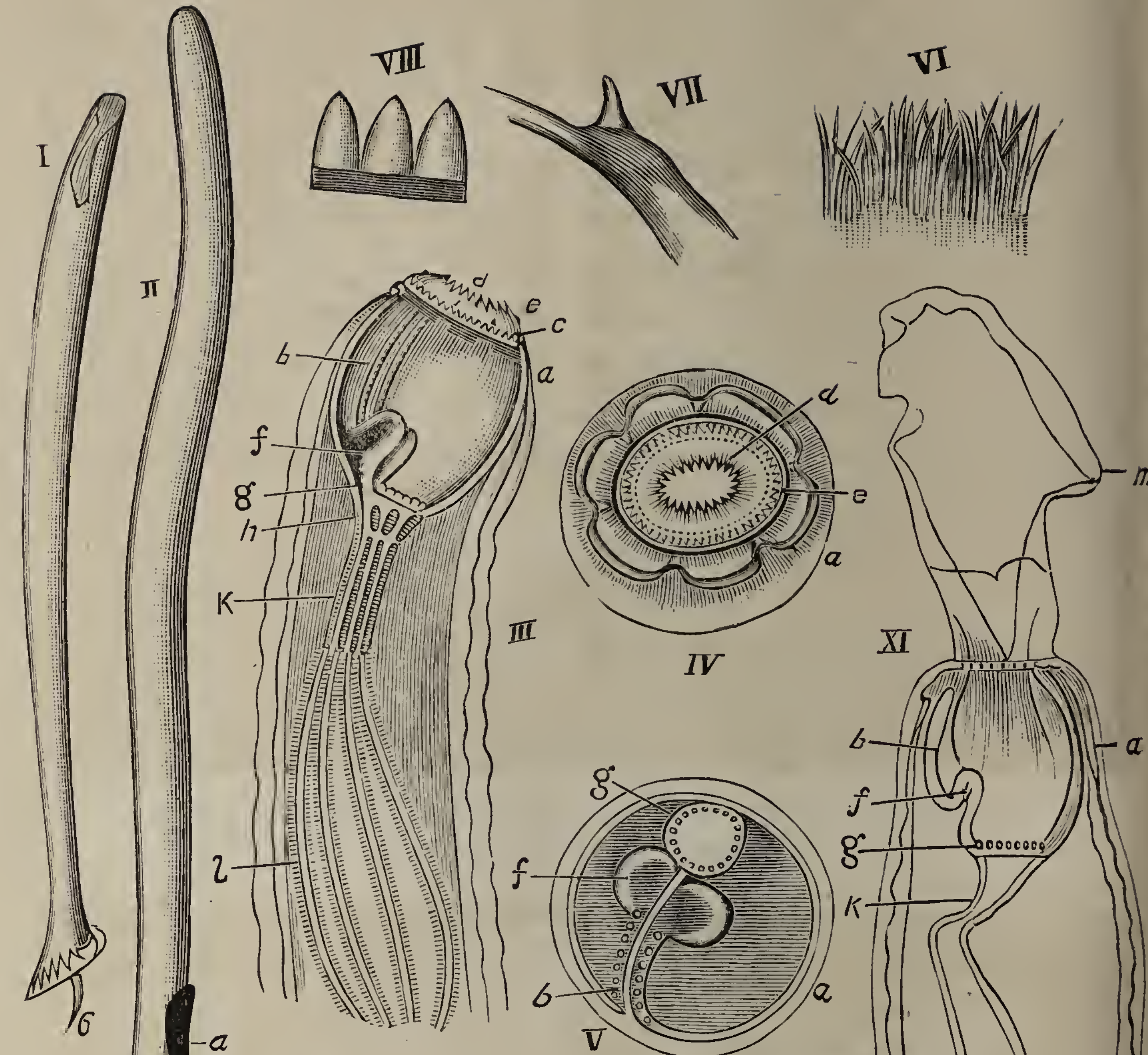
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PLATE II.

Fig. I.

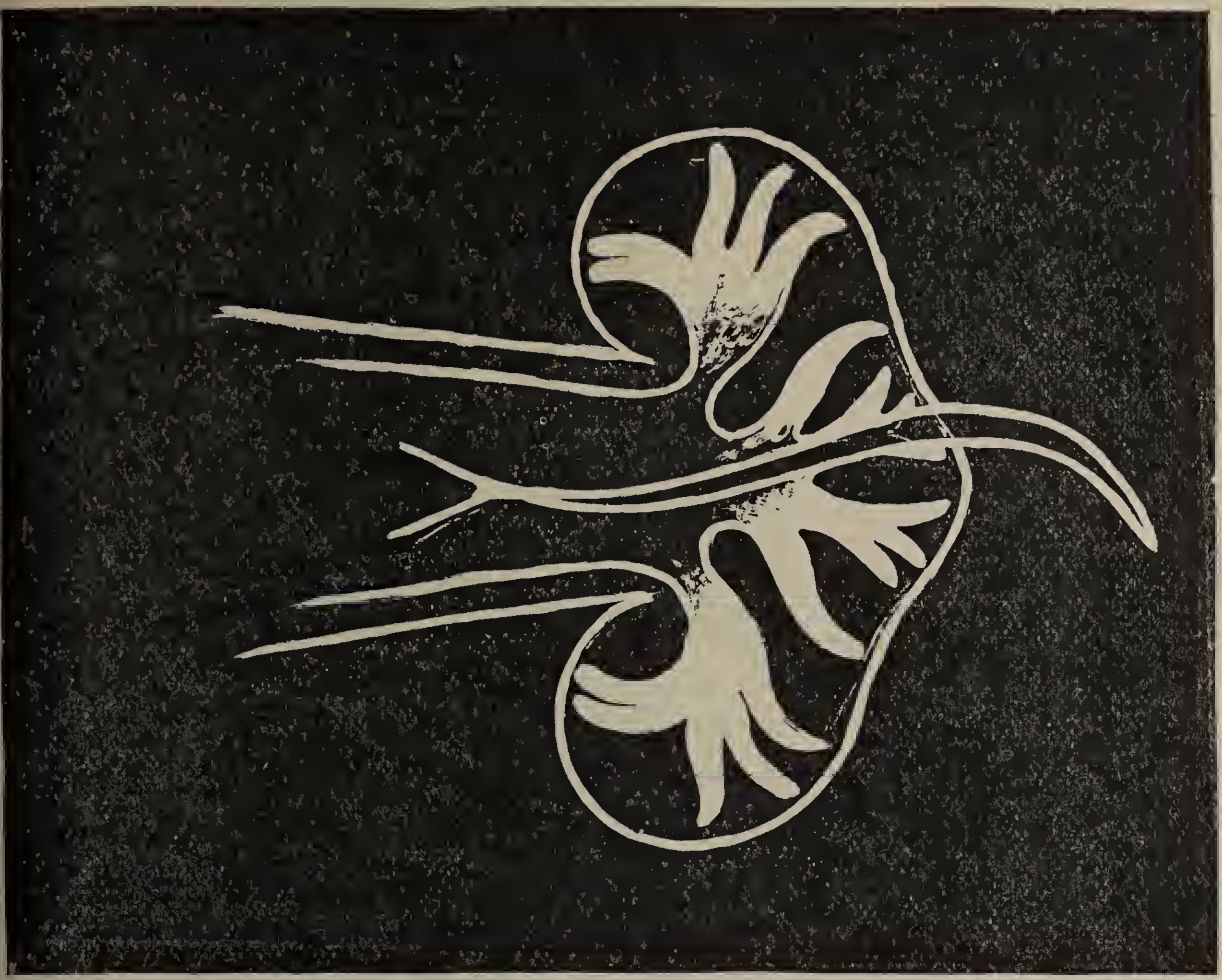


Fig. II.

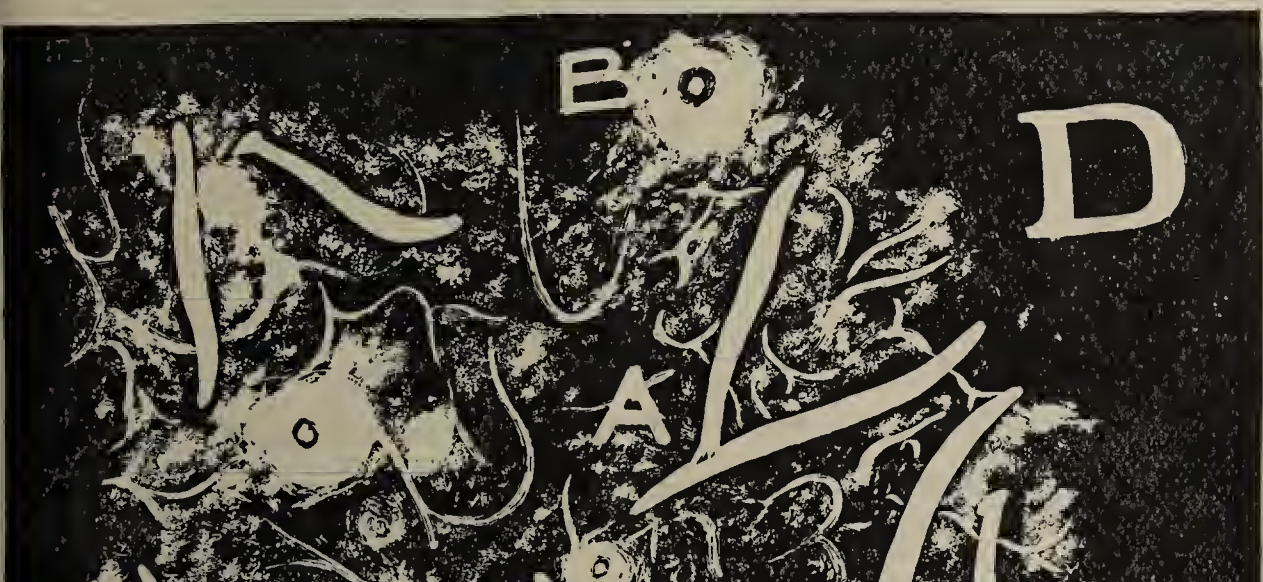


PLATE III.

Fig I

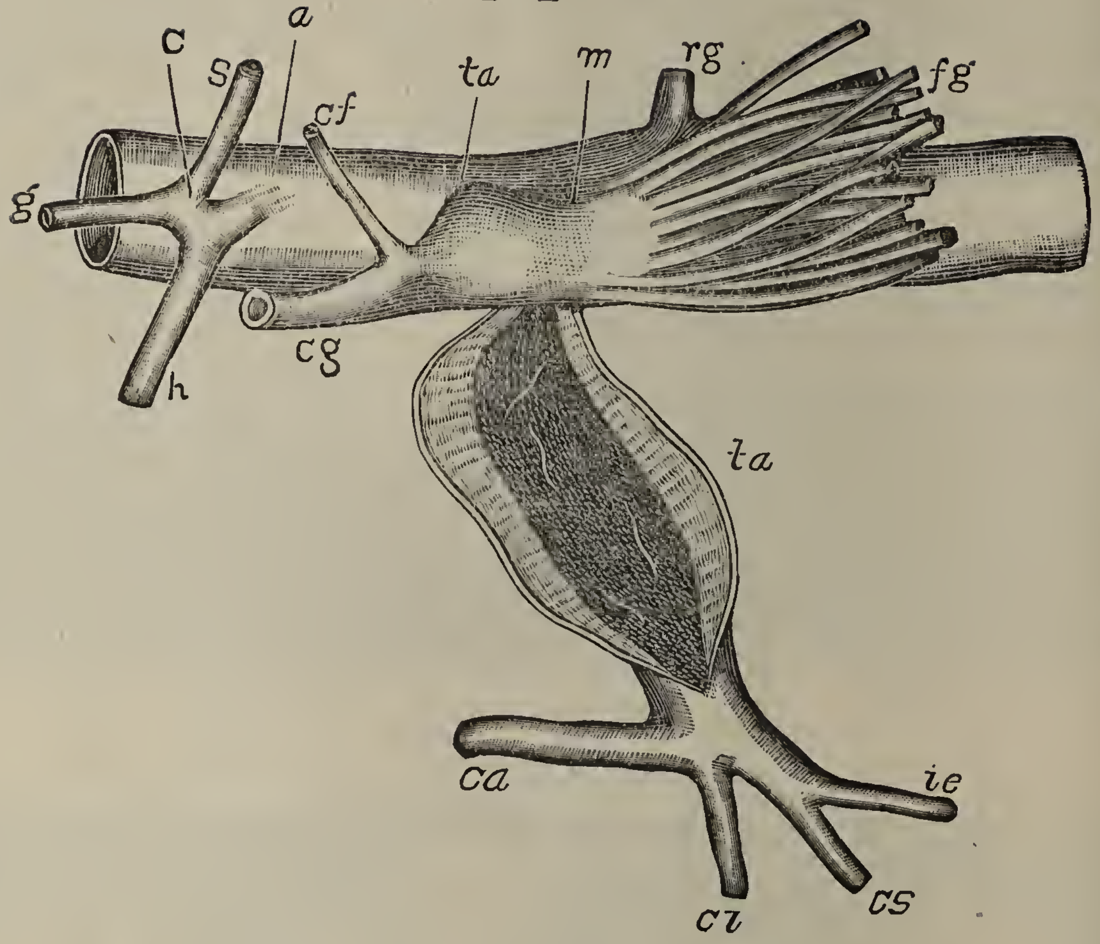
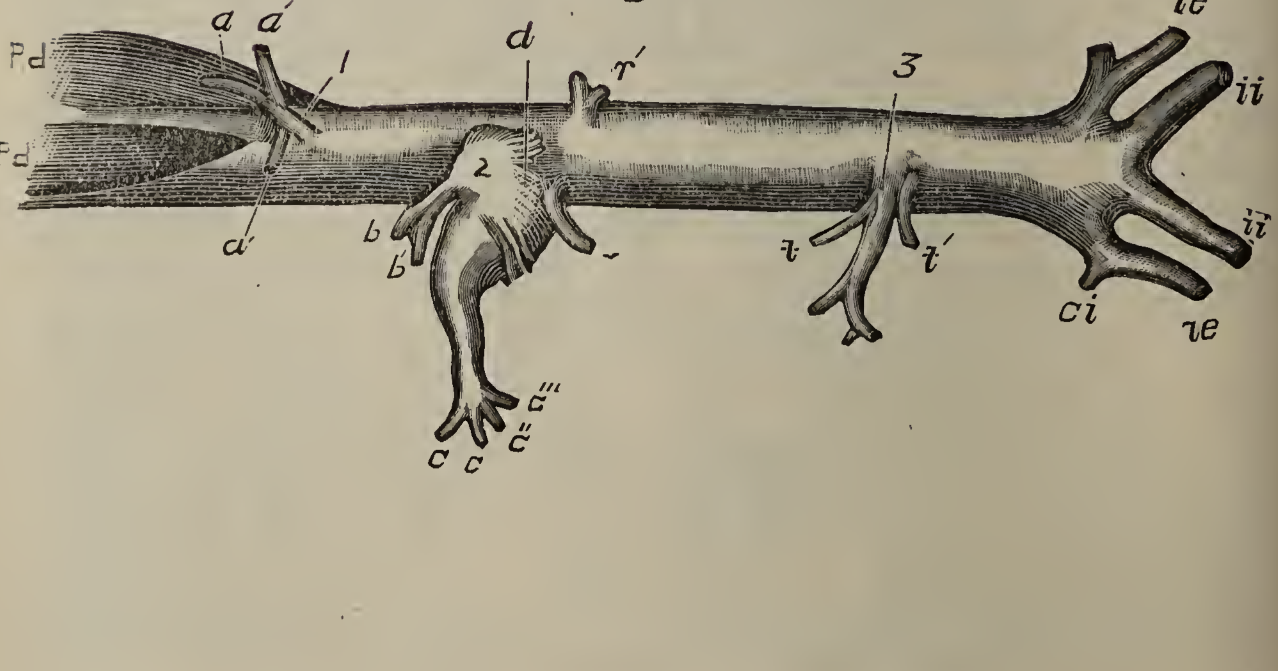


Fig II



PATHOLOGICAL ANATOMY.

HISTOLOGICAL STUDY OF THE EXPERIMENTAL AND SPONTANEOUS TUBERCULOSIS OF THE LIVER.

By Pilliet.

Aviar tuberculosis gives rise to lesions liable to considerable variations. In the rabbit one may observe either an absence of extensive lesions (that is, massive) or the formation of giant intra-vascular, surrounded with embryonic cells (Yersin type), or again, the formation of giant cells of transitory duration, which become the origin of an acute tubercular cirrhosis. In the guinea pig, the last form is most predominant. In birds (in spontaneous cases), the lesions vary, amyloid transformation being more frequent in some, while absent in others.

Experimental human tuberculosis gives rise, in the guinea-pig and the dog, to generative lesions (even of coagulation), which may resemble caseous tuberculosis, and to inflammatory lesions of an interstitial hepatatis, which obliterates the capillaries, and stimulates, secondarily, the atrophy of the habenulœ with its sequelæ. In the acute forms, no properly so-called tuberculosis is found in the liver. One may find in that organ in man, nodular lesions, not encysted, lymphoid in their nature, and often accompanied with hemorrhages, and forming a starting center for cirrhotic lesions. There is no essential difference between these lesions and those which are produced in the guinea-pig. In the monkey, intermediate forms are found.

The existence of this series of intermediate forms between the most marked cases, renders the appreciation of the nature of the inflammatory or degenerative lesions difficult; and it is here that anatomo-pathology must be enlightened by pathogeny.—*Rev. des Sc. Med.*

EXPERIMENTAL RESEARCHES IN THE TRANSMISSIBILITY OF THE CANCER.

By S. Duplay.

The attempts which have been made to transmit cancer from the dog to other animals (rabbits and guinea-pigs), or from man to animals, have ended in merely giving rise to inflammatory lesions, manifested around the grafted fragments which have always, however, afterward completely disappeared by resorption. The conditions of this first series o experiments are such that it may be concluded that cancerou neoplasms are not absolutely transmissible from one anima to another of a different species. In respect to the attempt made to effect the transmission of the disease from dog to dog differently from what might be inferred from facts obtaine by others, they have in the hands of the writer been followe only by negative results. But in default of further experiments and more numerous observations, made under mor favorable conditions, the author does not desire to be understood as definitively accepting the negative theory.—*Rev. de Sc. Med.*

PHYSIOLOGY.

UPON THE SUPERIOR LARYNGEAL NERVE OF THE HORSE.

By Sig. Exner.

Professor Moller had observed in two experiments, tha the section of the superior laryngeal nerve in the horse gav rise to a degeneration of the muscles of the larynx on the sid operated upon.

S. Exner has also discovered by means of the laryngoscope that the section of the same nerve in the horse immediatel brought on paralysis of the vocal cord on the same side.

These experiments and their results being denied by H Munk and his students, Breisacher and Gutzloff, Exner renewed his observations on two other horses, and observed, thi time, that the section of the laryngeal nerve did not produce the paralysis of the vocal cord.

The most plausible, if not only possible explanation o such contradictory conclusions, reached by equally conscientious and careful observers, must be looked for in the suggestion that the superior laryngeal nerve in the horse, is, b its physiological composition, subject to a considerable degre of individual discrepancy and inconsistency.—*Rev. des S Med.*

EXTRACTS FROM GERMAN PERIODICALS.

By R. Middleton, R.V.S., Philadelphia, Pa.

TETANUS AND INFLUENZA.

Schindelka observed four cases of tetanus that had been rought to the Vienna clinic, and which subsequently conracted influenza, under circumstances which led him to supose that between the micro-organisms of the two diseases here existed a certain antagonism.

The peculiar course of every case emphasizes the obducon that the tetanus bacillus is retarded in its development y that of influenza.

The four instances here recorded developed so little varition, one from the other, that by reiterating one, an idea is ecured of the others.

On the fifth of September an old gelding was led to the ospital with the history that the same symptoms then maniested had been present for three days; these consisted of a eneral tetanoid state of all the muscles.

For want of proper accommodations and space, the patient as put in a box stall, adjacent to two horses at this time afected with influenza. The former could take no solid food ecessitating mastication—the trismus being too extensive—ut could imbibe any nourishment in the form of a liquid. he contraction of the posterior muscles was not of sufficient ntensity to greatly effect the power of locomotion in these mbs.

From the fifth to the eighth day much perspiration exded; pyrexia absent; respiration varied between twenty nd twenty-four; pulse rate indicated forty-eight; temperaure ranged from 99.6° to 100.4°. Treatment gave negative esults.

On the evening of the ninth day, the picture presented by he animal was an entirely different one. Previously much xcited, the patient now stood with drooping head and half losed eyes, but the spasms continued with the same intensity. emperature 104°; pulse 56. The next day great weakness overcame the animal; conjunctiva reddened and swollen; lc of appetite; increased thirst; indifferent to surrounding The cramp of the various muscles had subsided, and the tr mus in particular had disappeared. The tongue was perfect mobile, and moved with the greatest freedom. Power of v lition over the whole body seemed to be reinstated.

From the eleventh to the fifteenth day the amount pyrexia remained over 104° and sank to 102°; pulse declin from 60 to 48. On the fourteenth bay the debility was of widespread a nature and intensity, as to indicate the admin tration of excitants. Recovery is recorded from the si teenth day on. On the twentieth day patient free of feve and on the thirty-fourth, the same was discharged as cure

In the other three cases the cause of the disease could traced to wounds upon the animal. In these also could di inution and ultimate disappearance of the tetanus be record immediately upon the rise of temperature, *i. e.* contraction influenza.

In every case the horse had suffered from tetanus mo than a week—nine to seventeen days—before experiencir influenza.

In experiments, at a later period, undertaken to confir the above, in which cultures of influenza were used, these mo interesting results could not be confirmed. In not one i stance did Schindelka succeed in annihilating tetanus throug injection of pure influenza cultures. It is, nevertheless, wit more than passing notice that we read the account of this o curence at the Vienna university.—*Œsterreich. Ztschr. f. Wi*

RETRO-PHARYNGEAL HEMORRHAGE IN A COW.

A cow that was the second time pregnant, exhibited tum faction of the left sub-aural region.

The animal was in medium good flesh, was well nourishe and gave much milk. On the inferior border of the paroti gland, and displacing the larynx, a well demarcated swellin which approached in size a child's head. A few centimete posterior to the angle of the left inferior maxillary, a flu

iating surface about the extent of a quarter dollar; all other
ortions of the formation were warm, hard and painful. Gen-
al condition healthy.

J. diagnosed an abscess, but did not venture a solution of
s origin. Puncture of the aforesaid soft spot of the tumor
erated about one pint of a healthy, yellow, odorless pus.

After the incision, I changed his diagnosis to a suppurative
ematoma. The wound readily healed with the diminishing
size of the formation; later the general health was affected.
s this swelling receded, there appeared upon the inner sur-
ce of the left inferior maxillary branch, a hard oblong tumor
tending upward and inward, displacing the larynx and
arynx. Also in the parotid region could a swelling be de-
rmined, directly superior to the larynx, which interfered
preciably with respiration. The nature of these swellings
uld not be determined.

The animal became debilitated and continued to emaciate;
fficult deglutition associated itself with the dyspnoea, the
rmation increased in circumference, until finally a trache-
omy was done as a last resort.

Two days later the patient expired; a great quantity of
ood escaped from the nose, and later occluded the nasal
enings as a coagulated mass.

The post-mortem exposed thickening of the pharyngeal
ucous membrane, with hypertrophy of the sub-mucosa, in
ich numerons vessels had developed and rendered soft.
ljacent to the swelling on the submaxillary bone, the con-
ctive tissue sensibly thicker. The cavity of the first ab-
ess had been entirely effaced. Head of the trachea and
ophagus to right of the median line and surrounded by
undant tissue. Above the latter on the left side, and be-
een the posterior nares, a large blood coagulum, sur-
unded by a thin coating, which included some of the styloid
nes. Each surrounding wall of the tumor was connected
th the inflamed periosteum of the inferior maxilla. The left
loid bone, thickened by ostitis and a periostitis, was in-
ded in the above clot. The right styloid bone, and right
anch of the jaw were normal. The coagulum was softer

upon the right side, and continuous through the poster nares forward to the exterior.

Nowhere could a degenerated or ruptured vessel be c covered; all the evidence pointed to an extravasation or t parenchymatous hemorrhage.

J. is of the opinion that several hemorrhages had occur in the tissues of this locality, one of which had formed t suppurative collection at first mentioned, the others becomi organized masses, which included the adjacent bones in t inflammatory process. These numerous collections would ve naturally produce narrowing in the caliber of the phary causing difficulty in deglution and in respiration.—*Deuts Ztschr. f. Thiermed. Bd. xii. H.* 4, 5.

INTRAVENOUS TRANSFUSION OF ZIEMSEN.

This method of subcutaneous injection of blood, whi several years ago attracted much attention, and which h been greatly esteemed, has been much improved. The c method consists of removing the blood directly from t vein by means of a canula needle attached to the same sy inge which is used to introduce the blood into the conn tive tissue beneath the mucosa. During the propelling of t blood into the latter tissue, the region is kneaded or exercis by means of the fingers for a quarter hour, thereby dispe ing the fluid and avoiding the formation of thrombi. By th means large quantities of blood may be incorporated wi the cellular tissue, without the appearance of the smallest c agulum.

Though this manner of blood transfusion is made valua because it is so technically simple, so effective and so una companied by danger, yet Ziemsen's opinion is that it wi not entirely supplant the intravenous injection. Its effec are, moreover, not felt so instantaneously as the latter, a from the pressure applied in diffusing the blood, it must ne be that cells are destroyed in the process.

Ziemsen, however, has ingeniously united the promine qualities of each method, and excluded those objectiona atures which made the intravenous and his old method unesirable. His principle is to use a hollow needle in removng the blood, and a second needle to inject the same directly nto the vein of the recipient. The fundamental element of ccess in the application of this procedure is an aseptic conition of the instruments, skin of the patient and hands of the perator. Narcosis is necessary in order that the vein may e exposed and the needle introduced without permitting, ontemporaneously, the admission of air.—*Munch. med. Woch.*

HEALING OF FISTULA BY OLEUM TEREBINTHINÆ.

Most veterinarians appreciate with what great difficulty e healing of fistulous tracts is accomplished, in many inances, especially when occurring in places that are distant om one's office. In the following sketch we desire to adance a new method of procedure that has proved itself very cceptable by the rapidity and certainty of its operation.

The history, as related by the owner, is to the effect that r several months a cow had shown upon the left hind thigh, the region of the coxo-femoral articulation, a large swellg, that he had permitted a butcher to incise, four weeks revious to sending for me. Despite the fact that a large uantity of offensive pus escaped, the enlargement did not iminish, and the opening remained patent. The cow ate t little; gave little or no milk; became thinner from day day, and manifested great pain in the limb affected, being l but unable to rise when down. Since the patient was one the most valuable of the owner's animals, he insisted upon mmediate action.

We examined an emaciated, six-year-old cow, lying in the all; by urging, she slowly and with the emission of sundry ises, stood upon her feet. The region adjacent to the hip ticulation was much swollen, hard and painful upon presre. About the width of a hand, anterior to and somewhat low the ischial angle, there existed an aperture into which e could insert a finger several centimeters deep, and from hich there exuded minute quantities of a fetid pus, and

ichorous discharge at every movement of the articulatic
By means of a probe, a mass of uncovered bone was met
teen centimeters below the cutis. We communicated o
opinion as unfavorable to a rapid recovery, but the owner
sisted upon something being done, declining to slaughter t
animal. We therefore thoroughly cleansed the canal—own
refusing to permit an enlargement of same—ordering a fo
per cent. creolin solution injected three times a day. Aft
eight days of this therapy no benefit could be noted, and li
uor villati was substituted, being applied throughout fo
teen days with likewise no result. The condition at the te
mination of the treatment was precisely as at the beginnin
with the one exception that the appetite had fallen off. B
ow's solution and watery dilutions of an iodine tincture we
each used fourteen days with negative results.

All reputable measures having failed, we tried to persua
our client to permit an incision and scraping of the tract, b
he steadily maintained that there must be some agent app
cable to such a wound that would close it. As a last reso
we determined to use ol. terebinth. Americana as an injectio
but with little faith in its efficacy. A few days after our la
conversation, about the middle of December, we visited t
case, and introducing a glass syringe as deep as possible
the canal, emptied its contents, f ʒ ijss, therein. After the e
piration of the fourth day, we again called upon the patie
and repeated the dose, after which the cow was uneasy. T
owner received instructions to inject the same quantity fo
days later. About the tenth of January, being in the neig
borhood of the village, and curious to know the result of t
medicine, the farmer not having written to me since my la
visit, we approached the house of our client, who met
with a beaming countenance, and imparted the course of co
valescence in great delight. The appetite was now robus
and the agility displayed in regaining her feet when dow
was evidence that the excruciating pain had vanished wi
the other symptoms.

The second case of chronic fistula was in a horse sufferin
from "poll evil." This had been running six months; t

tient was so weak and thin at the time we took charge of e case that it could no longer be used for commercial purses. At the commencement, the canal opening was ineased in size, and the following preparations were used in e order named, but without producing a satisfactory ternation: Creolin solution, liquor villati, Burow's solution. nce the oleum terebinthinæ had proven so well in the first se, we concluded to apply it here also. Suffice it to say at in a few weeks the tract and discharges had vanished.—*rl. Thier. W.*

THERAPEUTIC NOTICES.

Several veterinarians have used naphthalin—colloquially camphor—in the powdered form with good results in ose cases where a bandage cannot be applied. Healthy and pid granulations are herewith induced. It is much better an creolin for this purpose, and very materially cheaper an idoform. Karl, of Monheim, used the powder and flour gether in equal parts. He used this in wounds of the vagina, er first irrigating with a creolin solution; he remarks the aling to have been more rapid with the application of this ent than without it. Karl also applied this mixture, kneaded o a dough, as a suppository in the obliteration of fistulous cts.—*Woch. fur Thierhlk., No.* 18.

Camphor-phenol in otitis externa is urged by Amick as an odyne, and for its efficacy as an antiphlogistic application.

℞ Camphoræ ℥ iii,
Ac. carbol. ℥ i,
Spir. vini ʒ i.

Sig.—Externally to the diseased parts.

Petroleum as an anthelmintic, says Perrin, is useful when ministered either as a drench or as a clyster, in destroying yuris vermic and tænia. The drench consists of an emuln made of one part petroleum to one hundred and twentye parts of water, with an equal quantity of ol. linum.

The rectum is previously emptied, and the treatment de several days successively, finally ending with a purge. od results reported.

Esteveus recommends resorcin, in a one to eight solution as a cure for fevers. Though in his patients the disease had extended to an astonishing extent, he was successful in ultimately curing every case by this method of treatment. The old incrustations are first removed, the patch washed with tar soap, and then either in a solution of creolin or corrosive sublimate.—*Deutsch. Med. Wochenschr.*

Revillet writes the following prescription for the use of creosote as a clyster.

℞ Creosoti, ʒ ssi,
Ol. Amyg.
Dulc. ʒvi,
Vitel.
Ovi.
Unius oq.
Destill, ℥ vii.
M.—Et. f. Emulsio.
Sig.—Give at one injection.

The cresote is by this method rapidly absorbed and well born. It is easily possible by this means to administer one drachm of creosote. Revillet gave every patient from seventeen to twenty ounces within five months.—*Therap. Monatsch.*, 4, 92.

REVIEW.

Dr. P. Willach. (Ueber die Natur der Coccidien. Arch. f. w. u. pr. Thierheilkunde. 3 und 4, 1892).

Dr. Willach favors us with a rather novel theory in regard to the nature of coccidia. He claims to have demonstrated by experiment that *Coccidium oviforme*, found in the liver of rabbits, etc., is not a protozoa but simply the egg o a nematode. This egg (? ? ?), upon being expelled from the body of the rabbit, develops into a new nematode which Willach names *Pelodera oxyuridis*, which, in turn, upon entering rabbits gives rise to *Oxyuris ambigua*, the eggs of which represent *C. oviforme.*

There can be no doubt that nematode eggs can easily be staken for coccidia, and in fact have been mistaken for them. ucocytes have also been described as coccidia by at least e author. But the statement that true coccidia are nema- de eggs instead of protozoa is one which we could ignore tirely were it not that this interesting and wonderful state- nt comes from one of the most scientific veterinary jour- ls published.

The secret of Willach's strange results is either that his ltures were not pure, but really contained some eggs of matodes, or that he really mistook eggs for coccidia. We quently find nematode eggs in the livers of rats and other imals at Washington, but a careful examination always en- les us to demonstrate their egg nature. Willach compares e division of the coccidia into sporoblasts directly with the gmentation of ova; there is undoubtedly a slight resem- nce between the two procedures, but from this point on e development of eggs and coccidia have no resemblance each other, for the sporoblasts of the coccidia give rise to ores, and these in turn to sporozoites. Willach would find very difficult to give a homology between these later stages coccidia and the further development of eggs. He has not empted to explain how forms like* *C. bigeminum* of dogs, *C. cruciatum* of fish, can be compared with ova.

The morphology and development of the coccidia has en established so well by zoologists that we need not dis- ss Willach's views further.—C. W. S.

lliet et Moussu. Filaire des boûtons hémorragique observée chez l'ane (Compt. rend. d. l. Soc. d. Biol. Juin 19, 1892, 6 pp.)

Authors found that *Filaria hæmorrhagica* which causes a taneous disease, known as blood-sweating, in the horse, is und also in the ass (*Equus asinus*). The parasite inhabits the bcutaneous and intermuscular connective tissue. The male rasite, which had not heretofore been observed, was found in the same tissue with the female. Embryos cannot withstand the slighest dessication.—(C. W. S.)

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* Several recent authors, including myself, have given Rivolta's synonym this species, as *Cytospermium villosum intestinalis canis.* I take this occa- n to correct this to *Cytospermium villorum intestinalium canis*, which is the ne used by Rivolta in 1878.

Railliet. Recherches sur la transmissibilité de la gale du chat et du lapin due au *Sarcoptes minor*, Fürst.

Railliet was unable to transplant this parasite from rabbit to rabbit, or from rabbits to cats, rats or dogs; the transmission from cat to cat was very easy, but from cat to rabbit it was more difficult; when rabbits had themselves contracted the parasites from cats they could transmit them to other rabbits.—(C. W. S.)

Railliet. Observations sur la résistance vitale des embryons de quelques Nematodes (Compt. rend. d. l. Soc. d. Biol. 1892 p. 703, 704).

Railliet gives a remarkable case of the infection of two dogs with *Uncinaria trigonocephala* and *Trichocephalus depressiusculus.* Eight years ago, he conducted some experiments on the development of these nematodes, and ever since that time every dog which he has placed in the kennel in which those experiments were conducted have become infested with these worms. The kennel has been cleaned very thoroughly a number of times, but the embryos have evidently not been entirely destroyed, for quite recently two more dogs (after eight years has elapsed), have become infected with the same parasites.

This, of course, does not mean that they were infected with embryos which have lived eight years, but the original infection was in 1884, and the dogs used since then have in turn become infected, and then have reinfected the abode.

Railliet recommends sulphuric acid as a disinfectant in such cases.

He further observed the resurrection of embryos of *Strongylus rufescens* which had been dried for sixty-eight days.—(C. W. S.)

R. Blanchard. Sur les Oestrides Americains dont la larve vie dans la peau de l'Homme (Ann. d. l. Soc. Entomol. d. France, 1892, pp. 109-154).

Blanchard has brought together a large number of cases of oestrus-larvæ, found under the skin of man; he further figures and describes ten larvæ in his possesion which were taken from men. His general conclusions are that four American species of oestrides belonging to the genus *Derma-*

bia attack man, but all of these are found in animals as well, o that we have no right to speak of the species *Dermatobia* r *Oestrus*) *hominis*. The four species in question have been escribed under the names:

1st, Ver macaque=*Dermatobia noxialis*: 2d, Torcel=*D. b:* (?); 3d, Berne=*D. cyaniventris*; 4, Ver moyocuil=*D. b.* (?).—(C. W. S.)

SOCIETY MEETINGS.

ENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Pennsylvania State Vet-rinary Medical Association was held in the parlors of the llen House, Allentown, Pa., September 6, 1892, and was alled to order by President W. Horace Hoskins at 10.30 A.M.

At roll call the following members responded: Doctors ollins, Diemer, Driebelbis, J. C. Michener, Gladfelter, Hart, oskins, Keeler, Keil, Kooker, J. C. Foelker, Pearson, Rad-ey, Thos. B. Rayner, Ridge, Rohn, Schaufler, Smith, Tim-erman.

Those present as visitors were: Drs. A. R. May, Boiling prings, Pa.; W. G. Benner, Doylestown, Pa.; S. J. Foelker, llentown, Pa.; D. Waugh, Pittsburg, Pa.; W. H. Hecken-erger, Catasauqua, Pa.; H. P. Eves, Wilmington, Del.; B. F. ing, Little Silver, N. J.; V. B. Weaver, Centre Valley, Pa.

The minutes of the preceding meeting were read and on otion adopted.

The new members proposed were: V. B. Weaver (non-raduate), Centre Valley, Pa.; Dr. W. L. Hart, D.V.S. Am. et. Col., Philadelphia, Pa.; Dr. Chas. J. Harriek, M.R.C.V. ., McKeesport, Pa.; Dr. Francis S. Allen, D.V.S., Am. Vet. ol., Philadelphia, Pa.; Dr. James C. McNeil, V.M.D., Vet. ept. Univ. of Pa., Pittsburg, Pa.; Dr. John Doris, D.V.S., hio Vet. Coll., Pittsbnrg, Pa.; Dr. Geo. C. Blaker, D.V.S., m. Vet. Coll., Richboro, Pa.; Dr. A. H. Dorney, V.S., On-rio Vet. Coll., Easton, Pa.; Dr. W. G. Benner, V.S., Onta-o Vet. Coll., Doylestown, Pa.; Dr. S. J. Foelker, V.S., Ontario Vet. Coll., Allentown, Pa.; Dr. W. L. Nunan, D.V.S., Am. Vet. Coll., Lansdowne, Pa.; Dr. J. T. H. Ferley, D.V.S., Am. Vet. Coll., Philadelphia, Pa.; Dr. David Martin, McKeesport, Pa.

A recess was then taken until the Board of Censors examined the applications for membership, and also considered some recommendation to dispose of the charge which had previously been preferred against Dr. Gotleib Meyers, from Allegheny, who registered from a veterinary college in Munich, Bavaria, but upon examination it was found that he held a certificate of attendance at an agricultural school, the same not being a veterinary school, nor having the power of conferring the degree. The president also requested the board to devise and recommend some means by which the treasury of the association could be replenished, the surplus having been drained by expenses for printing, postage, etc.

The board thereupon convened. When through with their deliberations reported favorably, recommending all the applications presented but that of Dr. David Martin, who was absent and did not appear before the board. His petition was then laid over until the March meeting.

The board further recommends that Dr. Gotleib Meyer be expelled from the association; that an assessment of $2 be levied upon each member of the association, in order that the expenses already incurred might be liquidated.

On motion the report of the Board of Trustees was received and their recommendations approved.

The next in order was the secretary's report, which gave a brief summary of the work performed during the past six months. Summarizing the registrations in many of the counties during the past six months, he made an earnest appeal for greater individual work on the part of the members.

The meeting then adjourned for lunch, and reconvening at 2 20 P.M., the president referred feelingly to the death of Dr. J. B. Fretz, and asked for the report of the committee on resolutions relating to the same.

Dr. W. S. Kooker, chairman, reported as follows:

Resolved, That in the sudden and unlooked for death of our late fellow member, Dr. J. B. Fretz, the Pennsylvania Veterinary Medical Association has lost one who, since the origin of our association, had its interest at heart, and by his counsel, courteous manner, gentlemanly conduct, and many good traits has endeared himself to all; and that we will ever hold his memory dear.

Resolved, That these resolutions be spread on the minutes of the association, and a copy be sent to his family.

W. S. Kooker, V.S.
Zeno S. Keil, V.S.
J. Rein Keelor, V.S.

Dr. A. Diemer, member of the Committee on Intelligence and Education, in the absence of the chairman (Dr. Weber), made an earnest appeal for stronger fellowship and greater unity of purpose among the members of the profession.

Dr. W. S. Kooker, chairman of the Committee on Legislation, reported but few violations of the act during the past six months. He advised the prosecution of Dr. R. M. Miller, Carlisle; Marcus Porter, Pittsburg; and that an injunction be asked for against the prothonotory of Allegheny county on the grounds of violating the intent of the act in continuing to register non-graduates. He reported also the case of a non-graduate in Lancaster county, who was appealing for the privilege of registering on the grounds that the act was unconstitutional.

Dr. S. J. J. Harger, chairman of the Committee on Sanitary Science and Police, being absent, had forwarded his report, and the president asked Secretary Ridge to read the same. Report:

The sense of the association was expressed favorably in regard to proposed sanitary laws which are under consideration in Pennsylvania. It was left jointly to committees on Legislation and Sanitary Science and Police, that they should direct the action of our association in regard to these proposed new laws.

Under the head of unfinished business the following amendment to the by-laws was adopted:

That the annual meetings of this association shall be two days, in order to more thoroughly complete our work.

Under new business, the following amendments were offered:

1st. That on and after the year 1893, the annual dues of this association shall be two (2) dollars, to be made in semi-annual payments.

2d. Any member in arrears for his initiation fee and dues for a period of two years, shall, after eighteen months, receive two quarterly notices of said arrearages, and, on failure to liquidate the same, shall be reported to the association by the treasurer for expulsion.

Bills to the amount of $132.13 were reported, and orders were passed for payment of same.

Papers being in order, Dr. Leonard Pearson gave a very complete summary of the views of all the leading investigators on the subject of "tuberculosis" in cattle, and particularly referring to the value of "tuberculin" as a diagnostic agent. He reported many favorable and interesting results in his own experience.

Dr. Jas. A. Waugh being absent, he had sent his brother, Mr. D. Waugh, to demonstrate his method of castrating cryptorchids. In the absence of an animal to operate upon, he exhibited his double side line and his way of securing them for operating. His plan was to pass up behind the inguinal canal to the point where he found the testicle engaged in its passage to the scrotum, and cutting or breaking down upon it, removing it with the ecraseur. In answer to an inquiry, he said that in over one hundred cases operated upon, he had failed to find a single case where the testicle was intra-abdominal.

Dr. J. F. Butterfield being absent, had forwarded his report on a case of intussusception. His report was read by Secretary Ridge.

The following delegates were appointed to the United States Veterinary Medical Association meeting at Boston on the 20th inst.: Drs. J. C. Foelker, J. Curtis Michener and John R. Hart. Dr. Michener declining, Dr. Geo. B. Rayner was appointed to fill the vacancy.

To the Veterinary Medical Association of New Jersey, Drs. W. S. Kooker, W. H. Ridge and Leonard Pearson were appointed for the next six months.

After which the meeting adjourned.

ROBT. GLADFELTER, *Rec. Sec.*
W. H. RIDGE, *Corres. Sec.*
W. HORACE HOSKINS, *President.*

NEW JERSEY VETERINARY MEDICAL ASSOCIATION.

The Veterinary Medical Association of New Jersey held its twenty-sixth regular meeting on Thursday, August 11th, 1892, at Saenger Hall, Belmont Avenue, Newark, N. J.

Meeting was called to order at 11 A.M. by the President, Dr. J. C. Dustan, of Morristown, N. J. Minutes read and approved

The Secretary called the roll, and the following members responded: Drs. J. C. Dustan, Morristown; J. W. Hawk, Newark; W. B. E. Miller, Camden; J. C. Higgins, New Brunswick; B. F. King, Little Silver; S. Lockwood, Woodbridge; H. W. Roland, Newark; W. Runge, Newark; R. O. Hasbrouck, Passaic; B. L. Drummond, Woodbridge; W. H. Cooper, Jersey City; J. Gerth, Jr., Newark; M. M. Stage, Dover; J. M. Everett, Hackettstown; A. W. Axford, Naughright; H. Exton, Washington; S. W. Shuppan, Jersey City; H. W. Eliot, Newark, and a number of visitors.

Applications for membership: Dr. J. N. Wittpenn, Jersey City, N. J., graduate of the American Veterinary College; Dr. O. C. Eisenhart, Asbury, N. J., graduate Ontario Veterinary College; Dr. Frank Lippincott, Swedesboro, N. J., non-graduate; Dr. W. Horace Hoskins, Philadelphia, Pa.; John O. Pitney, Newark, N. J.

Dr. Miller made report of the Board of Censors, and recommended the names of Dr. J. N. Wittpenn and Dr. O. C. Eisenhart for active members, and Dr. F. Lippincott's application be returned; also recommended Dr. W. H. Hoskins and John O. Pitney as honorary members. Report accepted.

SPECIAL MEETING HELD IN NEWARK.

Report of Committee on Legislation.

Report of Committee on Registrations.

List of prosecutions in Camden, N. J., reported.

Election of members: Dr. J. N. Wittpenn and Dr. O. C Eisenhart elected active members. Dr. W. H. Hoskins an John O. Pitney, the counsellor of the Association, as hono ary members.

Dr. S. W. Shuppan, one of the essayists, read a paper o "Is Pneumonia Contagious."

Cases were reported by the following: Drs. Miller, c Camden; Gerth, of Newark; Hawk, of Newark; Shuppar of Norwalk, Conn.; Runge, of Newark; Higgins, of Ne Brunswick; King, of Little Silver.

The following members were dropped for non-paymen of dues: Drs. Otto Von Lang, Salem, N. J.; C. Lawien Newark, N. J.; Robert Leis, Newark, N. J.; R. T. Churchil Secaucus, N. J.; R. Stanwood, Freehold, N. J.; A. Maurice Moorestown, N. J.

After reports of committees, meeting adjourned for dinne

Meeting was resumed at 4 P.M., and after transacting som miscellaneous business, adjourned at 7 P.M. to meet on Thurs day, Dec. 8th, 1892, at New Brunswick, N. J.

W. H. Cooper, *Sec'y.*

OBITUARY.

J. L. Kidd, D.V.S.

We regret to announce the death of this worthy mem ber of our profession, which occurred a few days ago i Lexington, Ky. Dr. Kidd graduated at the American Veter inary College in 1887.

POSITION WANTED.

Wanted by a Graduate of the A. V. C. a situation as assistant (if acceptabl with view to partnership), to a Veterinarian with a general practice. Referenc furnished.

Address Sabiston & Murray, 916 Sixth Ave., New York City.

PRACTICE FOR SALE.

A practice of about $4,000 a year in a city of 24,000 inhabitants. No othe graduate in the city. Correspondence solicited.

Address Phillips & Phillips, 114 N. Lawrence Ave., Wichita, Kans.

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1892.

EDITORIAL.

VETERINARY EDUCATION.—As one of the evidences of the
ogress accomplished by veterinary science in the United
ates, there is probably none which carries more weight
an the demand which has arisen of late years for the im-
ovement of the instruction to be obtained in our veterinary
lleges.

While the faculties of some of these institutions have ap-
eciated the importance of the subject, and have been gradu-
y improving their curriculum, and also increased the length
their terms of study and of the required attendance upon
tures, some of them have still continued the same line of
rk which they had inaugurated at the opening of their
reer ; and it is, no doubt, in view of this condition of things,
well as the obligatory imposition that better and more
orough training should be given to our young veterinarians
t the amended resolution was passed at the last meeting of
United States Veterinary Medical Association recom-
nding the establishment of the requirement of a three
ars course of study as an imperative condition of gradua-
n.

Since the passage of this resolution, and its official publi-
ion in the REVIEW, we have received a number of letters
nplimentary of the action of the Association, from which
select one for publication from the pen of our friend, Dr.
W. Clement, the Vice-President of the Association, which

covers the ground well, and whose views, we have no doub
will prove thoroughly in accordance with those of all our rea
ers, as well as accordant with the importance of the questic
at issue.

VETERINARY EDUCATION.

When the United States Veterinary Association, representing the professi
in America, adopted an amendment to its by-laws specifying what it consider
the minimum requirements which a school should possess to fit men for the pra
tice of veterinary medicine, and demanded that all applicants for membersh
hereafter shall be graduates of schools possessing such requirements, we m
well say that no subject is of greater importance to the profession and to t
public than is that of veterinary education.

Any veterinary surgeon who fails to do what he can to make his calling o
of which he need not be ashamed, is false to his profession and to himself. V
condemn a man to professional ostracism who covers his medicines with t
secrecy of his pharmacy. We are much inclined to censure our fellows f
patenting a surgical appliance, yet can we expect else from men educated
many of the schools which are being boomed to-day almost from the Atlantic
the Pacific? Certainly not.

"As the twig is bent, the tree is inclined," is a proverb as true in one wa
of life as in another. When a body of men, with little or no capital, establish
school, there is a prime consideration, either expressed or implied, of person
gain at the expense of the profession. No man now has any moral or prof
sional right to encourage, directly or indirectly, a veterinary school unless t
circumstances under which it is started are so exceptional as to place it, fro
the beginning, upon a basis distinctly above any now in existence.

The time has passed when it can be said that the demand is such that a
sort of a school, no matter what its requirements, should be encouraged. T
much praise cannot be accorded to the pioneers in veterinary education, thou
for want of encouragement it were impossible for them to improve the curric
lum, even to the extent which the teachers themselves considered to be nec
sary for even an elementary training. Some of us know that the better of t
short-term schools were for many years a source of expense to their founders.

We all know that the long term "three-year" schools now in existence a
and always have been, financial failures, and were they to depend upon t
receipts from students they would be compelled to close their doors, or go in
the "mill business."

Fortunately, the long-term schools now in existence are not wholly depen
ent upon the fees of students for their maintenance. Never was there a pr
fessional school, and especially one in a profession so limited in its usefulness
ours, which was a financial success, that was not, at the same time, a prof
sional failure.

Our duty is very plain in this matter. We should encourage the long-te
schools now in existence, and should demand of every new comer that it of
inducements as great, and except from geographical considerations, greater th
any now in existence, for without these reasons it is too plainly evident that t

nsideration of personal gain is uppermost in the minds of its projectors. If wish to keep down quackery we must in every way discountenance the in- ences which tend to lower the dignity of our profession.

We have those among us of whom we may well be proud. One's responsi- ity is in direct proportion to the prominence of his position. We may pass noticed the actions of some members of our profession which would be inex- sable in those who, from their training and associations, should know better.

Let us look this matter fairly in the face and see what can be done to over- ne this inordinate desire on the part of many members of our profession to ume the title of "Professor."

A. W. CLEMENT.

BALTIMORE, October 14, 1892.

PLEURO-PNEUMONIA IN THE UNITED STATES.—At the t meeting of the United States Veterinary Medical Asso- ation, held in Boston, the members were favored with an cellent paper by Dr. Gadsden, of Philadelphia, on the sub- t of this "bovine disease," which, in consequence of the owded condition of our pages, we are unable to print in r present issue, which we very much regret. Shortly be- e the meeting, that most excellent agricultural paper, the *eeders' Gazette*, published under the interrogative heading "Why Not Kill that Cow?" an article in which, after giv- g a brief of the history of the work done, with a view to mp pleuro-pneumonia out of this country, and with more less indulgent criticism of the Bureau of Animal Industry d the veterinarians connected with that work, a question s asked of the Secretary of Agriculture for a positive tement of the results actually obtained.

The question has not been passed by unanswered, and in issue of the same journal for September 28th, the news s promulgated that "that cow has been killed," and that vine lung plague in the United States was a thing of the st—as appears by the issuing of the following announce- nt :

PROCLAMATION.

ERADICATION OF PLEURO-PNEUMONIA.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY.

To all whom it may concern : Notice is hereby given that the quarantines tofore existing in the Counties of Kings and Queens, State of New York, the Counties of Essex and Hudson, State of New Jersey, for the suppression leuro-pneumonia among cattle, are this day removed.

The removal of the aforesaid quarantines completes the dissolving of a quarantines established by this department in the several sections of the Unite States for the suppression of the above-named disease.

No case of this disease has occurred in the State of Illinois since Dec. 2 1887, a period of more than four years and eight months.

No case has occurred in the State of Pennsylvania since September 29, 188 a period of four years within a few days.

No case has occurred in the State of Maryland since Sept. 18, 1889, period of three years.

No case has occurred in the State of New York since March 25, 1892, a p riod of more than one year and four months.

No case has occurred in the State of New Jersey since April 30, 1891, a p riod of six months, and no case has occurred in any other portion of the Unite States within the past five years.

I do therefore hereby officially declare that the United States is free fro the disease known as contagious pleura-pneumonia.

Done at the city of Washington, D. C., this 26th day of September, A. 1892. J. M. Rusk, *Sec'y.*

All Americans, and doubtless also all veterinarians, mus feel gratified by hearing of such a result, notwithstanding th recent item copied in some of our daily papers from the S *James Gazette*, containing the statement that an America bullock, slaughtered at Deptford, had been found to hav suffered with pleuro-pneumonia in an aggravated form. A this same bullock had come from the western part of th country, it would seem that, should the report be true, th extensive sanitary measures which had been practiced in tha region, must have been imperfect, and the watch set for th insidious progress of that disease had been too confidentl overlooked after the stamping work of four years ago. Le us hope that this report from England is untrue, and that th proclamation of Secretary Rusk is accurate in its facts as t hte condition of our neat cattle.

Another Veterinary College.—While in Boston a tending the last meeting of the United States Veterinar Medical Association, we heard some vague reports relatin to the establishment of a new veterinary college in Washin ton City, D.C. These reports have been confirmed, and w have since received the announcement of the *National Veter nary College*, as it is entitled, and which counts in its facult a large number of members of the Bureau of Animal Industr he school opened on the 18th of October, with requirements r graduation similar to those of other like institutions, but cluding an attendance of only two full courses of lectures r their graduates.

We have been requested to publish the following resolu- ons which are entirely pertinent to the subject, and speak terms not less emphatic than the case demands and jus- fies :

Resolutions adopted at a regular meeting of the Philadelphia Veterinary ociety, September 27th, 1892 :

Whereas, It has come to our notice that the officers and staff of the Bureau Animal Industry, connected with one of the departments of the National overnment, propose establishing a veterinary school in Washington, and

Whereas, All prominent veterinarians agree that it is absolutely necessary r intelligent and well prepared young men to study at least three years to fit emselves to meet the multitudinous and intricate duties of the veterinary pro- ssion, and all reputable schools of this country now require three years' attend- ce, or propose inaugurating three-year courses of study during the coming ssion, and

Whereas, All of the veterinary schools of Europe require at least three ars' attendance, and some of them four and five years, and the Royal College Veterinary Surgeons of England has recently adopted a four-year plan of udy, and the United States Veterinary Medical Association at its recent meet- g in Boston, September 21st, 1892, declared in favor of a three-year course of udy, and made this a necessary qualification for future membership in the As- ciation ; thus clearly showing the position of the best element of the veteri- ry profession, and

Whereas, We have a right to expect the Bureau of Animal Industry of the epartment of Agriculture, as the only department of our Government under the rection of veterinarians, to use all of its influence to elevate the veterinary pro- ssion of the land, and not, by permitting its officers and staff to establish and aintain a new, two-year, short-term veterinary school, use its power to dis- urage thorough veterinary education in the United States, and neutralize the ogress of the last ten years, and

Whereas, It seems to us contrary to the institutions of our Government to ake use of one of the bureaus of the Government to establish and maintain a hool, be it

Resolved, That this Society recognizes the utter impossibility of imparting fficient veterinary instruction to students in two college sessions to enable them practice veterinary medicine and surgery intelligently, and that it regards the tablishment and maintenance of schools giving such courses of instruction as a enace to the progress of scientific veterinary medicine. Be it further

Resolved, That this Society urge upon the officers and staff of the Bureau of nimal Industry, who are about establishing a new veterinary college in Wash- gton requiring but two sessions attendance upon instruction, to reconsider their action, and to refrain from doing that which will tend to lower the standard of the veterinary profession, retard the progress of veterinary education, and lessen the dignity and standing of graduates of American veterinary colleges in this and foreign countries. Be it further

Resolved, That this Society protests against such use of the Bureau of Animal Industry, and that the Hon. Jeremiah P. Rusk, Secretary of Agriculture, be respectfully requested to prohibit this attempt to use the bureau as above described. Be it further

Resolved, That a copy of these resolutions be sent to the Secretary of Agriculture, the Chief of the Bureau of Animal Industry, and to each of the veterinary journals.

[Signed] A. E. Conrow, M.D., V.M.D.
Moorestown, Burlington Co., N. J.

August Dieudonne Theodore Liesering.—We are informed by one of our own exchanges of the death of this brilliant veterinarian in August last, at the ripe age of seventy-two. Besides being Professor of Theory and Practice, Anatomy, Physiology, etc., at the veterinary school of Dresden, Dr. Liesering was the author of numerous works relating to our profession, among which his treatise and atlas of anatomy stand at the head.

ORIGINAL ARTICLES.

VETERINARY SCIENCE IN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

By W. L. Williams, Lafayette, Ind.

(A Paper read before the United States Veterinary Medical Association).

In studying the origin, development, history, resources and future prospects of the veterinary profession in the United States, we should critically examine not alone the pioneer practitioners and the veterinary schools, but also every department of veterinary science which can in any appreciable manner affect its status as a whole.

The teaching of veterinary science in agricultural colleges dates from a very early period in our professional history, the pioneer institutions in this matter being, so far as I can learn, Cornell University, University of Illinois, and Am-

erst. Prof. Law was employed to come from England in
868 to assume the chair of veterinary science at Cornell,
hich he continues to honorably fill, and at about the same
me Dr. Detmers, now of Ohio University, became lecturer
n Veterinary Science in the University of Illinois, followed
few years later by Dr. F. H. Prentice, and about 1869 it
pears that Dr. Stickney became lecturer on veterinary
ience at Amherst.

It is well known that these agricultural colleges with lec-
re or professorships of veterinary science, were largely the
sult of the Act of Congress of 1862, donating public lands
such States and Territories as would provide colleges for
e teaching of agriculture and the mechanic arts. These
ere given a still greater impetus in 1887 by the Act of Con-
ess establishing agricultural experiment stations in connec-
on with agricultural colleges, for original research into "the
ysiology of plants and animals, the diseases to which they
e severally subject, with the remedies for the same;" etc.

As a result of these inducements, we find that at present
enty-two agricultural schools have lectures regularly de-
ered on veterinary science to students of agriculture, while
o colleges conduct regularly organized veterinary depart-
ents with a total of six veterinarians, making in all twenty-
ght veterinarians regularly engaged in teaching veterinary
ience in colleges or universities, owing their origin and
aintenance largely to the federal legislation above cited. Of
ese twenty-eight veterinarians, seventeen are employed as
terinarians to experiment stations, and to these are to be
ded seven station veterinarians who maintain no relation
the teaching force of the colleges, constituting a total of
irty-five persons employed in these institutions either in
aching veterinary science or investigating animal diseases.
mpared with the total number of veterinarians, it is true
eir numbers are small, but when it is remembered that the
rties in control of such institutions are presumed to seek
t from among the masses those veterinarians showing the
ghest proficiency and greatest earnestness and progressive-
ss and, further, that in such institutions the incumbents in

the various positions are supposed to be provided with unusual facilities for study and research, and that such study is to be pursued and the results recorded as a part of their duty to the college, then this band of thirty-five veterinarians should be looked upon as at least a possible force in our professional development.

For the first few years of the period which our subject covers, the duties of these veterinarians were confined nominally to the teaching of veterinary science to students in agriculture, in such a manner and to such an extent as to be of practical value to them in rearing and handling live-stock Later, veterinary departments, leading to veterinary degrees were established in several colleges, and still more recently the position of veterinarian to experiment stations.

The scope of our paper, as announced, is already too great, and we shall be obliged to leave out of consideration the veterinary departments in agricultural colleges, and shall barely remark in passing that of four of these colleges which have been organized and solicited public patronage, Cornell University and the University of Minnesota have discontinued them, leaving the University of Ohio and the Iowa Agricultural College as the sole representatives of this class of instruction.

At the outset, when in 1868 and the immediately succeeding years, the pioneer teachers of veterinary science in agricultural schools were beginning their labors, the veterinary profession was practically unknown except in a few limited areas, including the great cities of the Atlantic seaboard while the medical care of the far greater part of our vast number of domestic animals was intrusted to a horde of untutored farriers, and dissipated, unprincipled charlatans. Indeed, at that time the name veterinary surgeon was unknown to the great mass of people, while that of "horse doctor" was one of opprobrium and disgrace, and the two terms were so frequently transposed as to occasionally cause annoyance to pioneer veterinarians. In some of our Western States, the first qualified veterinarians to locate there were those employed by agricultural colleges, and in some cases, doubtless o other practicable means would have induced the veterinaian to so locate.

The colleges could illy afford to employ other than men f high moral, social and educational standing, and in turn heir relation to the college admitted the veterinarian withut further credentials to agreeable social and professional ssociations, essential no more to his comfort than to his reatest usefulness in influencing the forces then busily layng the primitive foundation of our profession in the United tates.

By his position as professor or lecturer, the veterinarian's ervices were frequently in demand by the leading owners of ive-stock, as well as by the local and general authorities in ase of notable outbreaks of epizootic diseases, and enjoying hrough his position public confidence and esteem, became nconsciously a teacher of no small import in a manner not xpressly demanded as a part of his direct duties. His serices in this manner served, without in any degree inconvenincing him, to pave the way for the great number of veteriarians so soon to become his neighbors and colleagues. Yet is principal influence was to be exerted within college walls pon the agricultural students with whom he came in contact s instructor.

Primarily, this influence was apparently intended to be onfined to teaching the intending agriculturist those princiles of anatomy, physiology, hygiene, pathology and theraeutics as would be directly applicable upon the stock farm. his purpose had a more valuable and direct application in he early history of the movement than obtains now, when raduated veterinarians are located in almost every considerble live-stock center, a certain portion of whom are compeent, qualified men.

True education is not readily hidden under a bushel, howver, and when the student emerged from college with a true onception of veterinary science, although unacquainted with s details, he yet unconsciously became a force in his comunity, and bore to his neighbors some of the respect and dmiration for veterinary science, which he had obtained through his associations and study with his learned instructor. This indirect influence, through the medium of students, added to the direct influence of the veterinarian by his contact with intelligent stockmen, exerted a powerful influence in the formation of our profession.

It was impracticable to obtain figures as to the exact number of students who came under the direct influence of these earlier teachers, but it would probably be safe to estimate their number in 1870 at no less than one hundred different students each year, which has slowly increased, until the twenty-seven professors of veterinary science in these schools come in contact with not far from six hundred new students annually. These students, going out into their respective communities, imbued with a true conception of veterinary science, have exerted and continue to exert a good influence, second only to that of genuine veterinarians from our best veterinary schools.

They had much in their favor. The agricultural colleges being jointly Federal and State Institutions, were founded upon a high plane, and were independent to a great extent from the greed exhibited by private institutions conducted for revenue, and demanded for admission to their classes a high order of moral and educational attainments from their very origin, which are as yet undreamed of in many of our veterinary schools of the present day. The veterinarians, therefore, came in contact, not with ignorant, dissipated, ungentlemanly boors, but with high-minded gentlemen, destined to occupy an honorable rank and exert a profound influence. It was these instructors of veterinary science, more than any other one agency, which made the phenomenal moral and educational progress of our profession within the past few years possible. I have heard this form of education bitterly denounced by graduates of cheap veterinary colleges, who were sadly wanting in those qualities which go to constitute a gentleman; who lacked sufficient education to enter the preparatory classes in such institutions, and who had utterly failed in their brief college career to gain any conception of veterinary *science*, but only learned a few empirical formulæ, which might enable them to eke out a fraudulent existence. These gricultural colleges have in many States proven the chief lement in making veterinary science respectable, and have endered it possible for fraudulent veterinarians to exist for a ime in quasi-respectability. We do not hear such bitter deunciation from broadly educated, gentlemanly veterinarians.

There are, however, among the better educated of our rofession, many persons who greatly undervalue the imporance of these schools.

It is, moreover, unfortunately true that both in the past nd at present there have been instructors in these schools ho have failed in their mission and sent out students with uperficial ideas relating exclusively to "rule of thumb" ractice, differing from charlatanism none in its esential value, nd having to a certain extent the same immoral and dishonest endencies. Some, I believe, have held short courses of a few eeks' duration in veterinary science, and issued thereon ertificates of a character which might prove of use in the ands of designing individuals in deceiving the public. But he failure of a few instructors to properly perform their uties—either through ignorance or design—does not constiute a proper basis for criticism of the entire body, or the cenral idea of their work.

Again, especially in these short courses, in which veterinry science forms a conspicuous part, there may occasionally nter designing individuals, who come for the sole purpose f returning to their communities with some cheap notoriety nd use their attendance at the short course for advertising urposes. The cheapness, shortness of course, and absence f mental or moral faculties demanded at some of our vetrinary schools, serves, however, to practically eliminate the anger in this direction from our agricultural schools.

On the other hand, many intelligent young men, reared on he farm and quite familiar in a general way with domestic nimals, entered these schools largely for the purpose of acuiring an amonnt of veterinary science which would prove seful to them as stock-breeders, especially in localities where eterinarians were then unavailable, became unexpectedly—t times almost unconsciously—swerved from their original purpose, and became special students of veterinary science, and along with such collateral studies as zoology, botany, chemistry, etc., took up, to a greater or less extent, the entire category of veterinary topics, and in their four years' course put as much time—frequently far more thought—upon these special branches than is allotted to students in our short course colleges. Rarely did they stop with this, but having acquired a taste for veterinary study, and an inspiration for earnest work, armed with the knowledge of the collateral studies, until recently superior to that offered in any veterinary college in the land, and supported by a liberal general education, these students sought out veterinary colleges, and after obtaining liberal credits for the work done, entered the advanced classes and passed final examinations with credit. By referring to veterinary colleges requiring two or three terms attendance for graduation, we find students from the agricultural schools admitted to examination after one session's attendance, and we have been unable to find the record of one whose knowledge was found wanting; but in every, or nearly every case, they have carried off honors and in an unusually large per cent. of cases have won first places. They were not book-worms either, but sustain to-day in the battle of life the positions assumed upon graduation. Numbering far less than ten per cent. of the total number of graduates from American colleges, a very large proportion of these students from agricultural colleges, or from veterinary departments of agricultural colleges, occupy prominent positions.

Of the thirty-seven veterinarians engaged in experiment stations, or teaching in agricultural colleges, twenty-four received their veterinary education in America, and of these no less than sixteen or seventeen per cent. are either graduates of these colleges, or had been well advanced in the courses prescribed therein.

If we turn to the pages of current veterinary literature, or to our National Bureau of Animal Industry, or to the Faculties of our veterinary colleges, we find the names of these once agricultural students occupying prominent places, nd here, in our National Association, we find these men rominent in your councils and discussions. Certainly these ien must wield a far-reaching and salutary influence, not lone as moulders of public opinion, but to them certainly is ue the decision of many young men of education and char-cter to take up as a life-work the study of veterinary science.

So far we have dealt with the work and influence of these olleges in the past, when the veterinarians occupied the ngle position of lecturer or professor of veterinary science. t present the number of veterinarians has increased very onsiderably, and a new element has appeared which is closely ound up with the work heretofore done; the agricultural xperiment station has been added, and the professor of vet-inary science has in nearly every case been asked to accept, addition to his former work, the post of veterinarian to the xperiment station, and his salary has been apportioned be-veen the two. A few of them maintain the professorship one, while in other cases there is no connection with the aching department, but only with the station.

The scope of study has not materially changed in recent ears, and still embraces, as a rule, a consideration of all the ajor subjects of veterinary science, varying greatly in dif-rent colleges in thoroughness and amount of time devoted it.

In some, veterinary science is taught in but one year of e course, or even less, occupying five hours' class-room ork per week, while in other schools each class in the four ear's course comes in contact each year with the instructor in eterinary science, so that during their course they devote bout 500 hours of class-room and laboratory work to distinct eterinary topics—an amount equivalent to that required in r shorter course veterinary colleges. Such is the time quired by some colleges, such as Purdue University, ith iron-clad course of study, and all students taking the gricultural course must take so much veterinary science and more. In other institutions, like Cornell University and e University of Illinois, which are largely elective, the udent may take a much shorter course in veterinary science, or may, at his option in many cases, prolong it far beyond th point named, exceeding in the time allotted to it the time required for graduation in most of our veterinary colleges.

Thus, the writer devoted to the study of veterinary science not including collateral studies, one-third time for three year of nine months, or the equivalent of full time of one year o nine months; equalling the time devoted in some of our veterinary colleges, *including* collateral branches.

The equipment in these colleges varies greatly. In som it is practically wanting, while in others it surpasses in som respects that of many of the veterinary colleges. As a studen I found a better equipment in library, instruments, and apparatus at the agricultural than at the veterinary schools, an to-day several agricultural schools place at the disposal o their students better libraries than do the veterinary colleges while their collection of instruments and apparatus quit suffices for purposes of instruction.

In point of buildings the equipment shows extreme variation. The class-rooms are usually located in some of th main buildings, and generally some detached buildings mor or less commodious and convenient are provided for specia phases of work. Practically all the colleges having maintained a chair of veterinary science for any length of time ar provided with ample dissecting-rooms, where the anatomy o the domestic animals may be studied under very favorabl conditions.

In most colleges ample accommodations are afforded fo the conducting of free clinics, while in others they are limited and still more frequently illy arranged and not adapted t their needs.

As an illustration I might cite Purdue University, which in one building, 28x35 feet, expects dissections, experiments with contagious diseases, and free clinics to be simultaneously and successfully conducted; three classes of work under one roof, and practically in the same room which are universally recognized as incompatible.

The operating-room in this case adjoins directly the dissecting-room, with a door opening between the two, render-ng it impossible to carry out the modern rules of surgery, nd any surgical operation highly dangerous. The private urgeon, operating under such conditions, would be held reponsible for untoward results in his patients.

The additional possible danger of contagious diseases in ontiguous stalls renders the conditions for free clinics quite nfavorable. This probably forms a solitary exception in uch mal-arrangement of buildings, and there is reason to ope it will be eventually remedied.

I know of no other school where so unfavorable condiions exist.

The material for clinical demonstration in most of these hools is reasonably adequate, and of an appropriate characr, since the schools are generally located in agricultural ommunities, and the clinics usually free, the agricultural udent receives clinical instruction upon those diseases most evalent among farm animals, and consequently of most rect interest and value to him.

Again, the student who desires later to complete an edution in veterinary science finds these clinics of special value, e-eminently so if he intends after graduation to locate in an gricultural region. In this respect these clinics are usually uite superior in character to those offered in our veterinary olleges located in large cities, where they are confined closely the diseases incident to city environments and work, while e diseases of young and breeding animals are rarely met ith. Here the intending veterinary student can study with eat advantage the collateral branches and acquire a general ucation, which is, as a rule, sadly deficient in our profession America—and can at the same time enter upon the more rect veterinary studies deliberately and yet earnestly, and addition enjoy special facilities for studying that class of seases which are the most ineffectually taught in veterinary lleges—the diseases of young and breeding animals.

It certainly should cause no surprise to find such students stinguishing themselves in the veterinary colleges after ch deliberate preparation, instead of plunging suddenly o the whirl of the busy curriculum of the short-course col-

leges, with neither general nor special preparation. In add
tional proof of the value of this teaching, it may be relate
that our leading veterinary schools are careful to obtain cat
logues of these agricultural colleges, and supply to eac
agricultural student their catalogues, knowing full well th
from their ranks they secure their best and most reliable m
terial. Yet there is no reason for doubting if we have mad
any substantial progress in these respects in later years.

Where the instructor in veterinary science maintains th
same position held ten to twenty years ago, and is simpl
professor of veterinary science, there is certainly every re
son to expect even greater good, and in a fair proportion
cases we believe these expectations are realized; but in th
majority of these institutions the veterinary surgeon is mad
jointly professor in the college and veterinarian to the agr
cultural experiment station, drawing about one-half his salar
from each, and being expected to divide his time accordingl
In addition to filling these two positions, some occupy als
that of State veterinarian, and all, or nearly all, are permitte
to use the residue of their time in private practice. If prio
to the origin of the experiment station the veterinarian's tim
was profitably consumed in his duties then it must be ad
mitted that having him do the same work in one-half the tim
must act injuriously on the results. It may properly be urge
that in most cases the experimental work is slighted, and th
usual time given to college work proper, in which case
would be difficult to defend the practice of paying half th
salary from the experiment station fund. As already indic
ted, veterinarians in experiment stations may be divided int
two classes—those who are at the same time teachers in th
agricultural classes, and those whose whole time and dut
are confined to experimental work. The salaries and ex
penses for material for both classes are paid from the exper
ment station appropriation provided for by Congress in th
Act of 1887. The sixteen veterinarians, who are jointl
teachers and experimenters, cost the Federal treasury no
far from $20,000 per annum on account of station fund, whil
the eight persons engaged exclusively in this work cost i

alaries and material not far from $30,000, or a total cost per
nnum for experiments on animals of $50,000. A compari-
on of these figures with the existing equipments, and the
ork accomplished as shown by recorded results, is, to say
he least, somewhat startling. There is more than one sta-
on where the veterinarian receives one-half his salary for
upposed station work, yet has no building or even a pad-
ock, coop or cage in which to confine an experiment animal,
as no animal to confine, no microscope or microscopical ap-
liance, no bacteriological apparatus, no money to expend
or material, appliances or other necessities, and no immedi-
te prospects of such funds or conveniences being placed at
is command. Yet such men inform me that they are occa-
onally chided for their meager results. Still, they can
carcely be called the most unfortunately situated, and in-
ead of saying, "Blessed are the poor," we should say,
Blessed are the destitute, for from them no rational man
an expect returns." Surely, some of us are in a far more
npleasant situation, with buildings totally inadequate and
holly unsuitable, enough apparatus to occupy some space,
et not enough to work with, and an amount of funds avail-
ble barely sufficient to warrant failure of every undertaking.

At the scene of my labors, the veterinarian has at his com-
and one microscope without eye-pieces, and while there is
considerable number of appliances for bacteriological work,
et the equipment is quite inadequate. For material the nec-
ssary funds cannot be obtained. When eight or ten cattle
ere asked for and promised, as a basis for experimentation
ith *actinomycosis bovis* in relation to its transmissibility from
nimal to animal, and the fitness of the meat of actinomycotic
attle for human food, the authorities delivered one superan-
uated he-goat whose peculiar idiosyncrasies and odor had
endered him unpopular at the college farm. While the de-
ands have not in all cases been so wholly denied, yet the
unds placed at the disposal of the veterinarian have been so
eager as to ensure failure of experimental work, and bring
l the more censure on the veterinarian for the want of sub-
antial results for the meager expenditure. The equipment

in other stations, where one man is expected to act both as professor of veterinary science and veterinarian to the experiment station, is, in some cases, not a little better than what we have related, though certainly wholly inadequate, with but two or three exceptions, to warrant the expectation of creditable results.

Another formidable obstacle to successful experimentation is the heavy demands of class work upon the time and thought of the veterinarian. Five hundred hours annually or an average of three hours per day during the year, devoted to class work, with the necessary time for due preparation for class duties is in itself sufficient work for the average man. To this must be added time for private practice, which is essential to the capable teacher, in order that he may teach from the practical standpoint of experience. Surely, little should be expected of him in addition.

In general, also, experiment stations are under the direct management of the station director and college president who only in a moderate number of cases have any practical knowledge of live-stock, and very rarely anything approaching a just conception of veterinary science, but generally have educations leading to such degrees as M.A., LL.D. D.D., Ag. Ch., B.S, etc., rendering successful work under them impossible, except the veterinarian enjoy their confidence to such a degree (which is rarely the case) as to receive their sanction to do his work in his own way.

Yet another serious obstacle confronts the labor of this double-headed scientist. The ideal professor of veterinary science in an agricultural college must be a veterinarian who, along with a suitable, general and special education, has had a long and extensive experience in a rural practice, and has acquired an experimental knowledge of the diseases and their causes, of farm animals, especially of young and breeding stock.

On the other hand, the veterinarian to the experiment station is expected to possess, and as a rule should have, a thorough practical knowledge of bacteriology and bacteriological methods, which requires a long and close application to laboratory study.

If we have a man in this country who possesses both these equirements to a high degree he has so far concealed his dentity. Such a combination is in fact practically impossible. The literature supplied specially for the veterinarian is as a ule very meager. In my own case, although the post of eterinarian has existed for four or five years, he is not sup-lied with any current literature relating to his work, and nly during the past few weeks the first two standard books elating to his work were procured. Under such unfav-rable environments we are not warranted in expecting great esults.

With the few stations commanding the entire time and en-rgy of their veterinarian, we find naturally better equipments or the work; Nebraska leading, followed by Missouri and thers of less note.

We have given a rough estimate of the number of workers n experiment stations, their equipment and environment, and heir cost to the country. Their value must be estimated by he work accomplished and recorded. During the past year e have received station bulletins, to which the veterinarians ave contributed three popular articles on glanders, and one n diseases of sheep, none of which made any pretence to eing scientific, nor to have been founded on any original ork or study of the authors, but merely short popular de-criptions for farmers; also one treatise on flukes, one on Texas ever, one on Texas fever and hog cholera, one on ringworm n cattle and one on enzootic cerebritis in horses, all of which ere brief and contained nothing in advance of the general evel of veterinary science, and nothing likely to be preserved n future years as treasures of science, although it must be dmitted in passing that some of them possessed temporary alue to farmers and stockmen, and even in some cases to eterinarians.

One more recent contribution to our literature from station eterinarians must be passed in review, being an article entitled A Double Monstrosity of a Calf, Traceable to an Injury of its Mother," occurring in a bulletin of the Minnesota station, in hich the veterinarian describes a calf born at full term and normally developed, except a slight spinal curvature and absence of an anus and part of the intestine, and relates that the mother when five months pregnant was slightly horned by another cow high in the right flank, sufficient to cause a bruise as large as a fifty cent piece, and says: " No other conclusion could be reached than to ascribe the cause of the abnormalities of the calf to the blow which its mother received four months previous to the birth," and concluded that this case furnished a powerful argument in favor of dehorning. How a slight wound insufficient to abrade the mother's skin, and located in a part quite distant from the fœtus in utero, could curve the spinal column of the fœtus, annihilate a considerable portion, and displace the remainder of its intestine without injuring the dam or the fœtal membranes, or in any way interfering with the health and growth of the fœtus itself, the author does not attempt to explain. In fact he cannot explain except by revolutionizing our present knowledge of embryology, and the contribution without reasonable explanation is certainly unwarranted. Yet station directors demand and expect contributions of the character of these for the purpose of making a show in their bulletin, and thus attempt to have the public believe that the station veterinarian is actively engaged in important scientific work. I know that some of these bulletins were written under protest from their authors, but their protests were ignored.

The past year's record is a fair sample of preceding years, with a few notable exceptions, and gives a reasonable estimate of the returns for the annual expenditure of $50,000 in this wôrk.

In earlier years Billings and Detmers have contributed considerable of interest to experiment station literature, confined chiefly to hog cholera, although they have added some minor contributions of distinct merit. All are to some extent acquainted with the hog cholera contributions of Billings, which are so heavily adulterated with personal egotism for himself, and personal hatred towards others, as to render it difficult to sift out valuable truth, and it will probably be several years before a safe estimate can be placed on the value of

is work. More recently his contributions are almost wholly
ersonal in character, and should the present rate of conver-
ence toward personality continue, hog cholera will be entirely
owded out, and his entire energy, capital and force will be
xpended upon Billings and Salmon.

If the estimate which I have placed upon the results of ex-
erimental work in relation to animals and animal diseases, as
arried on in experiment stations, is at all within the bounds
reason, it must be admitted that there is a gross waste of
ublic funds and that there is need for some abuses to be
orrected.

The possible importance of these experiment stations to
ur profession is great, and we should look to it that these
ossibilities are in a reasonable measure realized. The prop-
equipment of a few stations for veterinary experimenta-
on, with competent veterinarians in charge, should, and
oubtless would, do much for the welfare of the nation and the
onor of our profession. At present we lack two elements,
quipment and men; but given the former, and let it be under-
ood that there is a suitable field for the latter, they will not
e long in being found.

While a given experiment of animals is far more expensive
sually than other agricultural experimentation, they yet
ossess the great value of universal application; whereas an
xperiment on cereals, etc., applies only to the same climate,
oil season and other environments, but the nature of one ani-
al disease is the same in winter or summer, in wet or dry sea-
ons, in north or south, on clay soil or loam.

States having great live stock interests could well afford
discontinue a large part of their experimentation with
heat, peanuts, and morning glories, and devote a large part
the experimental fund to animal physiology and pathology,
conformity with the letter and spirit of the law; but the
ss of the fund expended on men under the present environ-
ents of joint positions of professor and experimenter, the
etter both for the community and our profession. “Do one
ing well,” can be emphasized no more in any field of work
an the one under consideration. We believe it was an evil

day when these two lines were attempted to be combined in one man.

In those colleges and stations where an equipment, although inadequate, is furnished, there is usually sufficient annoyance to the veterinarian to detract his attention from his class-room work (which would otherwise be far better accomplished), and results in his doing half time and thought at two lines of work and leaving each line half done. We have noted the insignificance of the investigations recorded by experimenters, and were we to turn to their recorded study and work as teachers when occupying the double position we should find it quite as meager. It is a noteworthy fact that these colleges go to our veterinary colleges and select in the main the brightest and most promising young members of our profession, and under proper environments these men should distinguish themselves by their recorded observations and studies, for certainly their opportunities in these places should be the very best; yet it seems that a man no sooner enters such a position than he is largely lost to sight in so far as recorded work is concerned. Few indeed among them are ever heard from in standard literature in our journals or in our associations.

It is to be hoped that these matters will soon largely mend themselves. First of all, the lack of results from station work must eventually force those in control to seek the cause and attempt its removal, and when that is done we believe we shall find the positions of teacher and experimenter thoroughly separated. A mutual friendship and interest between the two should always exist, as they must prove very helpful to each other in many ways.

The teacher should be left free to devote his energies to teaching and allowed time for study and thought, and opportunity for an amount of private practice as would keep him refreshed and experienced. Experimental pathology belongs more properly to veterinary sanitary science, and should be pursued rather in relation with the veterinary police system of a State than with college education, and should to a great extent be under the control of intelligent stockmen.

College authorities should create some standard to be ap-lied in securing or retaining veterinarians in their positions, ıd should demand, in addition to the requirements of com-on manhood and education, special adaptablity for the posi-on of teacher or experimenter as evidenced by successful ork already accomplished in the line of proposed future uties, and not rely wholly upon the recommendations of in-rested preceptors or promiscuous laudations of incompe-nt persons.

Then when a man is selected for one of these positions let s superiors give him ample equipment and reasonable free-om in the detail of his work, and then demand results and ccept no apologies. We are constrained to believe that in e not far distant future these two lines of veterinary work ill develop rapidly, resulting in great good to the common-ealth and honors to our profession and to science in general.

THE USE OF MALLEIN

R THE DIAGNOSIS OF GLANDERS IN HORSES, AND EXPERIMENTS WITH AN ALBUMOSE EXTRACTED FROM CULTURES OF THE BACILLUS MALLEUS.

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In December, 1890, we extracted from culture liquids of cillus malleus an albumose which appeared to be the active inciples in these cultures. At that time a preliminary ex-riment was conducted to see if this substance could be used making guinea pigs immune to the disease of glanders. he result was that out of a set of five, three vaccinated and vo checks, only one, a vaccinated animal, recovered from an oculation of a glanders culture. This experiment has since en repeated on sets of ten and twelve guinea pigs with, at e present writing, only negative results. A note of this ork was published in the annual report of the Department of Agriculture for 1891. The albumose was best obtained from the cultures, after the removal of the germs by means of a Pasteur filter, by precipitation with absolute alcohol, resolution in water and reprecipitation.

In the July number, 1892, of the Archives de Medecine Experimentale et d'Anatomie Pathologique, A. Babes describes the isolation in the same way of apparently the same substance from glanders cultures. He claims with this to have been able to immunize guinea pigs against glanders. He has either failed to see or note our earlier experiments.

During the present year we have, at the direction of Dr. D. E. Salmon, turned our attention to the use of mallein as a means of diagnosing glanders.

In the experiments made by Preusse, Nocard,* Tietze,† Eber‡ and others, the mallein used was prepared, by scraping the surface growth from potato cultures, dissolving in water, sterilizing by heating to 100° C., filtering, and injecting upon the addition of an equal volume of a two per cent. solution of carbolic acid.

Our mallein was prepared in the following way: Acid peptonized beef broth cultures containing five per cent. of glycerine were inoculated with the glanders bacillus, and the cultures allowed to grow for two months at the temperature of the room. At this time the growth, which had been very abundant, had almost entirely ceased. The liquid was then heated for two hours from 80° to 100° C., after which it was filtered through a Pasteur tube to remove the germs. The resulting clear amber liquid, after being tested to prove the absence of germs and diluted with 50 per cent. of glycerine for better preservation, were used for injections. A purer lymph was obtained by the precipitation of the filtered cultures with absolute alcohol, and resolution in 50 per cent. glycerine. For practical purposes the crude lymph is equally as good. The greatest care and precautions have to be observed all of the work that the cultures are pure, of the proper age, d that the lymph is perfectly sterile and can be so preserved. are must also be observed in making the injection to avoid e danger of contamination or infection by means of the ringe.

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*Nocard, Recueil de Med. Veter. 1892, No. 8, p. 209.

†Eber, Recueil de Med. Veter. 1892, No. 8, p. 86.

‡Tietze, Berl. Thierarz. Woch. 1892, No. 8, p. 86.

The value of the mallein prepared as described, as a di- gnostic agent for glanders in horses, has been extensively ied at the experiment station of the Bureau of Animal In- ustry; and also by Doctors Francis of Texas. Dinwiddie of rkansas, and Casewell of Chicago. Lymph was also sent several other experiment stations and veterinarains, but ey have, as yet, failed to report. The results of these tests e recorded in the accompanying tables.

As sent out for use the lymph is diluted with an equal lume of glycerine, so that it will keep better.

The amounts of mallein named in the charts refer to the diluted solution. Of the diluted solution just double the antity was given.

At first we made injections with 1cc. of the mallein (2cc. the 50 per cent. solution), but finding this to be apparently o large a dose, as it sometimes gave a decided febrile reac- on in healthy horses, we have decreased the quantity to 5cc. of the mallein, or 1cc. of the 50 per cent. solution. But, dging from the results being obtained from some experi- ents now in progress, we may find it desirable to return to e larger dose, and depend on a second injection of those rses which gave a doubtful reaction for a positive diag- sis.

In several instances the same horses have been repeatedly jected. To indicate this in the charts a figure in brackets placed at the head of the column showing the tempera- res, which figure indicates the number of times the horse s been injected.

With the exception of a few of the earlier injections which ere made over the shoulder, we have made the injection ar the middle of one side of the neck, where any local elling can be readily detected. In our experiments the cal reaction, or swelling, in the glandered horse has been more constant and fully as characteristic as the febrile reaction.

The following notes refer to the tests made with mallein as recorded in Table 1. The numbers correspond to th numbers of the horses. The notes were recorded by the veterinarians making the tests:

Horse No. 1.—Horse was seven or eight years old, th right submaxillary gland was enlarged, there was a discharg from the right nostril, but no farcy buds. The condition o the animal was good.

The day after the injection there was an increased flo from the right nostril and painful enlargement at the point o injection.

No. 2.—Horse was six to seven years old. Both submaxillary glands were enlarged, and there was a slight nasal discharge. The condition of the animal was good. It had bee affected for six to seven months.

No. 3.—This animal was four years old, both submaxillar glands were enlarged, but there was no nasal discharge. Righ hind leg swollen. There were thirteen farcy buds. The general condition was poor.

No. 4.—The condition of the animal was fair, and ther were farcy buds on front legs and on the breast. The respiration was labored. There was no nasal discharge, the submaxillary glands were not enlarged, but the left eye wa mattering. Dr. Francis diagnosed a probable mild pneumoni in addition to the farcy.

No. 5.—Horse was about nine years old. Both submaxillary glands were enlarged, there was some nasal discharge Condition of the animal was very bad, farcy buds and chancres on both hind legs, veins of forelegs enlarged. The animal urinated frequently.

No. 6.—This animal was perfectly healthy.

No. 7.—This animal was six years old, in good flesh. Sh had been exposed to glanders about five weeks before injection. She was suckling a foal. The foal was kept from he for twelve hours previous to taking the temperature befor injection. After the injection, and during the test, the foa was returned to her.

No. 8.—This animal was a two-year-old filly, diseased with landers, in good flesh and apparently feeling well. The wner insisted upon having her shot immediately after the mperature was taken the last time.

No. 9.—This animal was an aged mare which had been xposed to glanders five weeks before the injection. She was very good flesh and condition.

No. 10. This was a three-year-old entire horse, small size, ell nourished, healthy. A painful swelling formed at point injection in four hours, and persisted forty-eight hours. aximum temperature was reached ten hours after injection nd was 17° F. above that at the same time the previous day.

No. 11. This was a four-year-old gelding, in fair condi- on, healthy, weight 1,050 pounds. The local swelling per- sted for two days, and temperature rose to 0.7° above that the same time the previous day.

No. 12. This animal was an old mare with chronic gland- rs, both lung and nasal lesions. Irregular temperature, usu- ly above normal. Large local swelling for two days. aximum temperature was reached twelve hours after the jection, and was 2.2° above that of the corresponding time e day before.

No. 12. Reinjected. Maximum temperature was reached n hours after making the injection, and was 2.5° above that the corresponding time the day before. The local swelling rsisted for three days.

As for the notes on the horses which were injected by this ureau, all of which were kept very carefully, it is not neces- ry to go into detail here. In general, we may say that the andered horses, except No. 14, were pronounced cases of e disease, having been condemned for glanders and farcy, the District of Columbia, and sent to the veterinary sta- on to be destroyed. Nos. 7, 23, 25, 31, 34, 35 and 39 were ses of glanders, with well marked nasal lesions. Nos. 10, , 20, 21 and 26 showed only symptoms of farcy (although o. 19 developed nasal lesions after the injections). The ly symptoms shown by No. 14 before injection were an evated temperature, 101° F. to 102.5° F., and an enlarged,

rounded (not nodular) left submaxillary gland, with a histor
of coming from a stable from which two horses were remove
and condemned for glanders September 21, 1891. From thi
date until Feb. 13, 1892, the mare continued in excellent con
dition, and the best of spirits, with no perceptible change i
the above symptoms, although freely purged with aloes tw
or three times during the period. Two days after the firs
injection there appeared a slight nasal discharge, followed b
an attack of acute glanders, the animal dying March 26th.

Guinea pigs were inoculated from farcy buds, or with th
nasal discharge from horses Nos. 7, 20, 23, 25 and 26, the pig
so inoculated all contracting glanders.

The healthy horses used, Nos. 8, 9, 11, 12, 13, 15, 16, 1
18, 22, 24, 27, 29, 30, 33, 36, 37 and 38, were in general i
good condition at the time of the experiment.

The glandered horses, except those with a high tempera
ture at the time of the injection (Nos. 34, 35 and 39,) a
showed a marked rise in temperature in from four to eigh
hours after the first injection, and usually reached the max
mum in from ten to sixteen hours after the injection. Furthe
there was in all cases a characteristic, very tender, abrup
swelling at the point of the first injection, and also at a
subsequent injections, except in Nos. 19, 20 (ninth injectio
and 34, generally beginning to appear two to four hours afte
the injection, continuing on the next day and increasing i
size for from one to three days, disappearing again three t
nine days after the injection.

Some of the healthy horses showed a slight rise of te
perature (No. 8 a marked elevation) upon the first injectio
but only in one instance, horse No. 38, did this rise persist o
the second injection. This latter horse has unfortunatel
been lost sight of, and sold. It was, to all appearances, fre
from disease when hired for the injection, but the rise o
temperature upon two successive injections would look sus
picious, although it did not show the characteristic swellin
of glanders after either injection. In healthy horses, in no i
stance was there very marked swelling at the seat of the i
jection of doses not exceeding 1 c.c. of the mallein. When

id appear, it developed in two to six hours, and had disap- eared again by the next day.

Horse No. 7 received a daily injection of 1 c.c. of the allein from May 11 to June 23, inclusive. During this time ere was no elevation of temperature, which varied from .5° F. to 101.6° F. But after each injection a local swelling ppeared, varying in extent from six to ten inches across, and isappearing at the end of about the third day. During the st week of the injections the swellings were less marked, but ill invariably followed each injection, otherwise no effect as noted from the continued treatment.

On horse No. 21, the farcy buds had entirely healed within week after the first injection, and on No. 20 the extensive rcy swellings had all healed, July 15th. Except a slight scharge from the left ear of No. 20, these two animals have ntinued apparently entirely well, and have improved in neral health since the above dates. However, the last in- ctions of the mallein, August 27th and 30th, caused a decided se in temperature and a marked characteristic swelling at e point of injection, which would indicate that the horses e not free from disease.

Table V shows the effect upon horses of the albumose ex- acted from the cultures. In the first of the experiments, e amount used, 0.005 grammes, was evidently entirely too rge, causing almost as much reaction in the healthy as in e glandered horses. In the second and third experiments e dose was reduced to 0.002 grammes per horse, but this as also slightly too large. This table serves to show the werful effect of the poison secreted by the glanders bacil- s. A dose of only 0.001 grammes of the albumose would obably be sufficient to give a decided reaction.

In conclusion, the tests made show that mallein is of great lue in the diagnosis of glanders in horses. The injection 0.5 or 1 c.c. of the mallein may cause a slight rise of tem- rature in a healthy horse, but it will rarely give a reaction on a second injection; and there will not occur on the althy horse any marked swelling at the seat of the injec- on. On the glandered horse, the first injection always gives marked febrile reaction (except as noted) and a large swelling at the seat of injection. Subsequent injections also giv a similar reaction, although frequently less marked. Health horses readily acquire an immunity to large doses of the ma lein, not so acquired by glandered horses. The active pri ciple in mallein is an albumose which can be precipitate from the cultures by means of alcohol or ammonium sulphat

Further experiments may prove that a preventive inje tion or treatment of glanders in horses is possible. The d rections, which were sent out to serve as a guide in testin the value of the mallein, may be conveniently given here fo future reference.

Make the test, if possible, with a healthy horse, as well a with one or two more affected with glanders. Take the ten perature of all these animals three times a day for one or tw days before making the injection. On the day of making th injection, take the temperature every two hours from earl in the morning until late in the evening. Use for each hors one cubic centimeter of the solution as sent you, and mak the injection beneath the skin of the shoulder. Be carefu and thoroughly sterilize the syringe after injecting eac horse, or better, use separate syringes for healthy and sus pected animals. If the same syringe must be used, inject th healthy animals first, and thoroughly sterilize the syring after each of the other injections. Sterilize the thermomete in carbolic acid after taking the temperature of each hors The temperature will begin to rise, as a rule, from three t four hours after the injection, and reach its maximum eigh to ten hours after injection. On the two days succeeding th injection, take the temperature three times a day. Note th general condition of the animal both before and after the in jection. After four or five days, the injection should be re peated. Keep the solution in a sealed bottle, and in a coo place. As sent from here it is free from germs.

So far as we have experimented, the mallein has caused rise in the temperature of all horses affected with glanders but it is possible that it also, in rare instances, causes a rise i the temperature of horses that are not affected with this dis ease. We deem it important that this latter point should b definitely determined by a large number of observations.

TABLE No. II.

EXPERIMENTS WITH MALLEIN.

	I.	Glandered, No. 7.
Before Injection.	December	TEM.
	11, 7.00 a.m.	100.2
	11, 10.00 “	100.7
	11, 1.00 p.m.	100.8
	11, 4.00 “	101.
	11, 7.00 “	100.8
	11, 10.00 “	100.6
		2c.c.
When Injected.	December	
	12, 7.00 a.m.	100.6
	12, 10.00 “	102.4
	12, 11.30 “	103.8
	12, 12.30 p.m.	104.2
	12, 1.30 “	104.6
	12, 2.30 “	105.2
	12, 4.00 “	105.3
	12, 5.00 “	105.1
	12, 9.30 “	104.5
	Very large swelling.	
njection.	December	
	13, 7.30 a.m.	103,2
	13, 10.00 “	102.6
	13, 1.00 p.m.	102.5
	13, 4.00 “	102.
	13, 9.30 “	101.6

	II.	Glandered. Reinjected (2). No. 7.	Healthy, No. 8.
Before Injection.	January	TEM.	TEM.
	26, 4.30 p.m.	100 6	100.4
	27, 8.00 a.m.	99.8	98.2
	27, 10.00 “	100.2	99.2
	27 1.00 p.m.	100.2	99.4
	27, 4.30 “	100.2	99.8
		1c.c.	1c.c.
When Injected.	January		
	28, 8,30 a.m.	100.2	99.4
	28, 10.15 “	101.2	99.8
	28, 11.15 “	102.4	101.4
	28, 1.00 p.m.	102.2	101.8
	28, 4.00 “	103.5	104.5
	28, 7.00 “	103.	103.2
	Very large swelling.		Slight swelling.
njection.	January		
	29, 8.00 a.m.	101.6	100.
	29, 10.00 “	101.6	101.2
	29, 1.00 p.m.	102.9	100.9
	29, 4.00 “	101.6	100.8
	29, 7.00 “	102.2	99.6

	III.	Farcy, No. 10.	Healthy, No. 9.
Before Injection.		TEM.	TEM.
		1c.c.	1c.c.
When Injected.	February		
	1, 9.00 a.m.	99.5	98.
	1, 10.30 “	100.2	99.8
	1, 12.00 m.	100.	99.2
	1, 3.00 p.m.	101.2	100.3
	1, 6.00 “	102.	100.8
	1, 9.00 “	103.2	101.8
	1, 11.00 “	105.	102.6
	Large swelling.		Very slight swelling.
njection.	February		
	1, 9.00 a.m.	100.4	100.2
	2,		101.
	2, 8.00 “	103.2	100.6
	2, 10.30 “	102.8	100.4
	2, 1.00 p.m.	102.8	100.4
	2, 4.00 “	103.	100.8

	IV.	Glandered. Reinjected (3) No. 7.	Farcy, Reinjected (2) No. 10.	Healthy, Reinjected (2) No. 8.	Healthy, Reinjected (2) No. 9.	Healthy, No. 11.	Healthy, No. 12.
Before Injection.	February	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.
	7, 9.00 a.m.	100.8	100.	99.4	100.	100.5	99.8
	7, 1.00 p.m.	101.2	100.	100.	100.6	101.2	100.2
	7, 5.00 “	101.2	100.2	99.8	100.5	101.2	99.8
		1c.c.	1c.c.	1c.e.	1c.c.	1c.c.	1c.c.
When Injected.	February						
	8, 8.00 a.m.	99.9	99.8	99.6	100.	101.	100.
	8, 10.00 “	100.8	100.6	100.	100.5	101.2	99.8
	8, 12.00 m.	101.4	100.2	100.	100.2	100.8	100.2
	8, 3.00 p.m.	103.3	102.6	100.6	100.2	100.4	100.
	8, 6.00 “	103.6	104.	100.4	101.	100.8	100.
	8, 9.00 “	104.	103.4	100.	100.8	101.2	100.2
	8, 12.00 mid.	103.	103.2	99.6	101.8	101.2	100.4
	Large swelling.		Large swelling.	No swelling.	No swelling.	No swelling.	No swelling.
njection.	February						
	9, 8.00 a.m.	102.2	100.6	100.2	99.8	100.5	100.1
	9, 1.00 p.m.	103.	101.2	99.8	100.9	100.8	99.8
	9, 5.00 “	102.8	102.2	100.6	100.8	101.2	100.
	10, 8.00 a.m.	101.	101.	98.4	101.2	101.2	100.
	10, 1.00 p.m.	101.3	101.2	99.8	100.8	101.3	99.8
	10, 6.00 “	101.4	101.	100.4	100.8	101.2	100.2

	V.	Farcy, Reinjected (3) No. 10.	Glandered, No. 14.	Healthy, Reinjected (3) No. 8.	Healthy, No. 13.	Healthy, No. 15.
Before Injection.	February	TEM.	TEM.	TEM.	TEM.	TEM.
	12, 9.00 a m.	100.	102.4	100.	100.6	101.8*
	12, 1.00 p.m.	101.	101.6	100 5	101.	102.
	12, 5.00 “	101.6	101.8	99.8	100.6	101.6
		1c.c.	1c.c.	3c.c.	1c.c.	1c.c.
When Injected.	February					
	13, 8.00 a.m.	100.2	101.3	100.4	100.4	101.6
	13, 10.00 “	100.6	101.6	99.	100.6	100.8
	13, 12 00 m.	100.6	101.6	100.4	101.	100.8
	13, 2.00 p.m.	101.8	102.2	100.5	100.8	101.8
	13, 5.00 “	103.2	104.8	100.8	101.6	102.8
	13, 10.00 “	103.8	105.	99.4	101.2	101.5
	13, 12.00 mid.	104.4	105.	100.4	102.	101.2
	Large swelling.		Very large swelling.	No swelling.	No swelling.	No swelling.
njection.	February					
	14, 8.00 a.m.	101.4	103.4	100 4	100.	101.0
	14, 1.00 p.m.	101.8	104,	99.	100.6	101.6
	14, 5.00 “	102.	103.2	100.8	100.6	101.6
	15, 8.00 a.m.	100.6	103.2	100.6	100.2	101.6
	15, 1.00 p.m.	100.	102.6	99.	100.6	100.6
	15, 5.00 “	100.6	103.8	99.9	100.9	101.2

	VI.	Glandered, Reinjected (2) No, 14.	Healthy, Reinjected (2) No. 13.	Healthy, No, 16.
Before Injection.	February	TEM.	TEM.	TEM.
	17, 9.00 a.m.	103.6	99.6	98.8
	17, 1.00 p.m.	103.	99.8	99.5
	17, 5.00 “	103.	100.6	100.
	18, 8.00 a.m.	101.5	99.	98.6
		1c.c.	1c.c.	1c.c.
When Injected.	February			
	18, 10.00 a.m.	101.2	99.2	98.9
	18, 12.00 m.	101.	98.8	98.9
	18, 2.00 p.m.	101.	99.6	98.8
	18, 4.00 “	102.2	100.2	99.4
	18, 7.00 “	102.2	100.6	99.
	18, 10 00 “	101.8	100.2	98.8
	Large swelling.		No swelling.	No swelling.
njection.	February			
	19, 8 00 a.m.	101.5	99.8	99.6
	19, 1.00 p.m.	101.5	100.	100.2
	19, 5.00 “	102.4	99.8	99.8
	20, 8.00 a.m.	103.6	100.	99.4
	20, 1.00 p.m.	103.2		100.4
	20, 5.00 “	103.8		
	21, 8.00 a.m.	102.6		

EXPERIMENTS WITH 1 c.c. MALLEIN.

Tests by M. Francis, College Station, Tex.

	Temperature.					Temperature.	
	No.1	No.2	No.3	No.4	No.5	Healthy, No. 6.	
July						July	
19, 9.00 a.m.	100.	99.9	100.6	102.	101.6	24, 9.00 a.m.	99.8
19, 2.00 p.m.	100.	100.6	101.6	102.2	101.8	24, 4.00 p.m.	100.2
19. 5.30 "	100.6	100.7	101.6	102.2	101.8	24, 6.00 "	100.2
20, 9.00 a.m.	100.	99.9	100.9	104.4	101.4		
20, 2.00 p.m.	100.4	100.6	101.9	102.9	101.8		
Injected at 7 a.m.							
July						July	
21, 9.00 a.m.	100.	100.	100.	102.5	101.4	25, 8.30 a.m.	99.8
21, 11.00 "	102.4	102.	101.8	102.9	102.3	25 10.30 "	100.2
21, 2.00 p.m.	103.5	102.	103.5	103.5	102.7	25, 12.30 p m.	100.1
21, 5.00 "	104.2	103.4	103.9	103.5	102.8	25, 2.30 "	101.
21, 6.30 "	103.5	104.	104.2	103.1	103.4	25, 4.30 "	101.4
						25, 6.30 "	101.8
						25, 8.30 "	101.
welling at Point of Nose.	Swelling.					No Swelling.	
July						July	
22, 10.00 a.m.	103.	101.9	101.5	103.8	102.3	26, 6.30 a.m.	99.8
22, 2.00 p.m.	103.2	102.	102.4	102.	103.8	26, 8.30 "	100.
22, 5.30 "	102.2	101.5	102.	101.5	102.2	26, 10.30 "	100.8
						26, 12.30 p.m.	100.2
						26. 2.30 "	100.
						26, 4.30 "	100.
						26, 6.30 "	100.

Tests by John Caswell, Chicago, Ill.

Temperature.		Temperature.		Temperature.	
Healthy, No. 7.		No. 8.		Healthy, No. 9.	
July					
12, 8.00 a.m.	100.4	8.00 a.m.	102.4	8.00 a.m.	100.
12, 11 00 "	100.4	12.00 m.	100.4	11.00 "	100.2
12, 5.30 p.m.	100.6	6.00 p.m.	101.2	5.30 p.m.	100.4
July					
13, 8.30 a.m.	100.	8.30 a.m.	100.8	8.30 a.m.	100.
13, 10.30 "	100.2	10.30 "	101.	10.30 "	100.2
13, 12.30 p.m.	100.8	12.30 p.m.	102.4	12.30 p.m.	101.4
13, 3.00 "	100.8	3.20 "	104.8	3.00 "	100.6
13, 6.00 "	100.4	5.00 "	101.8	6.00 "	100.4
		6.00 "	101.8		
July					
14, 8.30 a.m.	100.2	8.30 a.m.	105.4	8.30 a.m.	99.8
14, 3.00 p.m.	100.	3.00 p.m.	103.4	3.00 p.m.	99.8
14, 5.30 "	100.	5.30 "	102.	5.30 "	99.8

Tests by R. R. Dinwiddie, Fayetteville, Ark.

Temperature.		Temperature.		Temperature.		Temperature.	
Healthy, No. 10.		Healthy, No. 11.		No. 12.		Reinjec. (2) No. 12.	
April		April		April		April	
4, 9.00 a.m.	99.6	8, 9.30 a.m.	99.2	12, 6.30 a.m.	99.9	18, 9.00 a.m.	101.
4, 3.00 p.m.	100.8	8, 2.00 p.m.	100.	12, 8.30 "	99.7	18, 3.00 p.m.	101.
4, 7.00 "	100.1	8, 6.30 "	100.2	12, 10.30 "	100.	18, 7.00 "	101.3
5, 6.20 a.m.	99.8	9, 6.00 a.m.	100.	12, 12.30 p.m.	100.9		
5, 8.20 "	99.	9, 10.00 "	99.9	12, 3.30 "	100.9		
5, 10.20 "	99.	9, 2.30 p.m.	99.2	12, 4.30 "	101.		
5, 12.20 p.m.	99.5	9, 8.00 "	100.6	12, 6.30 "	101.7		
5, 2.20 "	100.	9, 10.00 "	100.4	12, 8.30 "	101.		
5, 4.20 "	100.3			12, 10.30 "	101.		
5, 6.20 "	100.5						
5, 8.20 "	100.3						
Injected at 6.20 a.m.		Injected at 6.45 a.m.		Injected at 6.30 a.m.		Injected at 7 a.m.	
April		April		April		April	
6, 6.20 a.m.	99.2	10, 6.45 a.m.	99.3	13, 6.30 a.m.	100.3	19, 7.00 a.m.	100.4
6, 8.20 "	99.2	10, 8.45 "	99.6	13, 8.30 "	100.5	19, 9.00 "	100.8
6, 10.20 "	99.4	10, 10.45 "	100.	13, 10.30 "	101.3	19, 11.00 "	101.7
6, 12.20 p.m.	100.	10, 12.45 p.m.	99.	13, 12.30 p.m.	101.9	19, 1.00 p.m.	101.9
6, 2.20 "	101.3	10, 2.45 "	100.3	13, 2.30 "	102.9	19, 3.00 "	102.7
6, 4.20 "	102.	10, 4.45 "	100.2	13, 4.30 "	103.8	19, 5.00 "	103.8
6, 6.20 "	101.8	10, 6.45 "	101.	13, 6.30 "	103,9	19, 7.00 "	103.5
6, 8.20 "	101.4	10, 8.45 "	101.3	13, 8.45 "	103.		
6, 10.20 "	101.	10, 11.00 "	101.2				
April		April		April		April	
7, 6.20 a.m.	99.	11, 6.00 a.m.	99.9	14, 9.00 a.m.	101.3	20, 9 00 a.m.	101.5
7, 12.20 p.m.	99.4	11, 10.20 "	99.9	14, 12.30 p.m.	101.3	20, 3.00 p.m.	102.1
7, 4.30 "	99.	11, 2.00 p.m.	99.8	14, 4.30 "	101.9	20. 7.00 "	103.
8, 9.00 a.m.	99.	11, 4.20 "	100.	14, 6.30 "	101.9		
8, 1.50 p.m.	99.1	11, 10.20 "	100.	14, 9.30 "	101.5		
8, 6.15 "	100.			15, 9.00 a.m.	100.		
				15, 2.00 p.m.	101.4		
				15, 5.40 "	103.		

TABLE No. III.

EXPERIMENTS WITH MALLEIN.

	VII.	Glandered. Reinjected (4) No. 7.	Glandered. Reinjected (3) No. 14.	Healthy. Reinjected (2) No. 16.	Healthy, No. 17.
	DATE.	TEM.	TEM.	TEM.	TEM.
Before Injection.	Feb. 22, 9.00 a.m.	99.8	103.8	98.5	98.4
	" 22, 5.00 p.m.	99.6	103.8	100.	100.5
	" 23, 8.00 a.m.	99.4	102.8	99.2	100.2
	" 23, 1.00 p.m.	99.8	102.8	99.8	100.
	" 23, 5.00 "	101.1	103.2	99.8	101.4
	" 24, 8.00 a.m.	100.	102.2	99.5	100.
		1c.c.	1c.c.	1c.c.	1c.c.
When Injected.	Feb.24, 10.00 a.m.	100.2	102.2	99.4	100.4
	" 24, 12.00 m.	100.2	102.2	99.8	99.5
	" 24, 2.00 p.m.	100.4	102.	100.	100.
	" 24, 4.00 "	100.4	102.4	100.4	101.1
	" 24, 6.00 "	101.2	102.4	99.6	101.2
	" 24, 8.00 "	100.2	103.2	98.5	100.8
	" 24, 10.30 "	102 5	102.8	99.7	101.1
	Large Swelling.		Large swelling.	No swelling.	No swelling.
After Injection.	Feb. 25, 1.00 a.m.	102.5	102.6	99.8	101.5
	" 25, 8.00 "	101.	102.7	99.5	99.8
	" 25, 1.00 p.m.	101.6	103.2	99.4	100.4
	" 25, 5.00 "	102.6	103.2	99.8	100.
	" 26, 8.00 a.m.	101.6	102.8	99.8	100.4
	" 26, 1.00 p m.	102.	103.6	100.2	100.6
	" 26, 5.00 "	101.4	103.2	99.4	100.6

	VIII.	Glandered, No. 19.	Healthy, No. 18.
	DATE.	TEM.	TEM.
Before Injection.	Mar. 30, 1.00 p.m.	101.4	99.6
	" 30, 6.00 "	101.4	101.
		1c.c.	1c.c.
When Injected.	Mar. 31, 6.00 a.m.	101.6	99.4
	" 31, 8.00 "	101.2	99.
	" 31, 10.00 "	101.4	99.3
	" 31, 12.00 m.	102.	99.1
	" 31, 2.00 p.m.	102.9	100.
	" 31, 4.00 "	102.9	100.2
	" 31, 6.00 "	103.4	100.4
	" 31, 8.00 "	104.	100.9
	" 31, 10.00 "	103.8	100.2
	Very Large Swelling.		No swelling.
After Injection.	Apr. 1, 7.30 a.m.	103.7	99.3
	" 1, 10.00 "	103.	99.8
	" 1, 1.00 p.m.	103.	99.1
	" 1, 5.00 "	103.	99.8
	" 2, 7.00 a.m.	101.4	99.2

	IX.	Glandered. Reinjected (2) No. 19.	Healthy. Reinjected (2) No. 18.
	DATE.	TEM.	TEM.
Before Injection.	Apr. 4, 8.00 a.m.	101.1	99.
	" 4, 1.00 p.m.	100.8	100.8
	" 4, 1.30 "		100.3
	" 4, 5.00 "	102.2	99.
	" 5, 8.00 a.m.	101.5	98.8
	" 5, 1.00 p.m.	101.	99.
	" 5, 5.00 "	101.8	100.4
		1c.c.	1c.c.
When Injected.	Apr. 6, 6.00 a.m.	102.4	99.4
	" 6, 8.00 "	102.6	99.
	" 6, 10.00 "	102.7	99.2
	" 6, 12 00 m.	102.1	99.6
	" 6, 2.00 p.m.	102.8	99.6
	" 6, 4.00 "	102.8	99.6
	" 6, 6.00 "	102.4	100.4
	" 6, 8.00 "	102.4	100.5
	" 6, 10.00 "	103.4	100.4
	Slight Swelling.		No swelling.
After Injection.	Apr. 7, 8.00 a.m.	102.	99.2
	" 7, 12.00 m.	101.	99.

	X.	Glandered. Reinjected (3) No. 19.	Healthy. Reinjected (2) No. 11.
	DATE.	TEM.	TEM.
Before Injection.	Apr. 25, 9.00 a.m.	101.	100.2
	" 25, 1.00 p.m.	101.3	100.5
	" 25, 5.00 "	102.4	101.
		1c.c.	1c.c.
When Injected.	Apr. 26, 6.00 a.m.	103.6	99.4
	" 26, 8.00 "	103.	100.2
	" 26,10.00 "	102.8	101.2
	" 26, 12.00 m.	102.4	101.8
	" 26, 2.00 p.m.	102.	101.8
	" 26, 4.00 "	102.2	101.4
	" 26, 6.00 "	102.8	100.5
	" 26, 8.00 "	102.	100.
	" 26, 10.00 "	102.8	100.
	Slight Swelling.		No swelling.
After Injection.	Apr. 27, 7.30 a.m.	101.6	100.
	" 27, 10.00 "	101.4	100.6
	" 27, 1.00 p.m.	102.4	100.6

	XI.	Farcy, No. 20.	Healthy. Reinjected (2) No. 15.
	DATE.	TEM.	TEM.
Before Injection.	May 23, 8.00 a.m.	100.4	101.*
	" 23, 12.00 m.	100.2	100.8
	" 23, 5.00 p.m.	99.5	99.5
		1c.c.	1c.c.
When Injected.	May 24, 6.00 a.m.	1 0.	101.2
	" 24, 8.00 "	100.2	100.6
	" 24, 10.00 "	100.2	100.6
	" 24, 12.00 m.	100.6	100.8
	" 24, 2.00 p.m.	102.4	101.2
	" 24, 4.00 "	103.4	102.
	" 24, 6.00 "	103.8	101.8
	" 24, 8.00 "	104.8	102.4
	" 24, 10.00 "	104.9	101.8
	Large Swelling.		Slight swelling.
After Injection.	May 25, 6.00 a.m.	103.	100.8
	" 25, 9.00 "	102.8	100.4
	" 25, 12.00 m.	102.	100.8
	" 25, 3.00 p.m.	102.2	101.2
	" 25, 6.00 "	101 8	100.5
	" 26, 6 00 a.m.	102.6	100.4

	XII.	Farcy, Reinjected (2) No. 20.	Farcy, No. 21.	Healthy, Reinjected (3) No. 15.
	DATE.	TEM.	TEM.	TEM.
Before Injection.	May 27, 12.00 m.	101.2	100.8	100.4
	" 27, 5.00 p.m.	102.4	100.4	100.4
		1c.c.	1c.c.	1c.c.
When Injected.	May 28, 6.00 a.m.	101.6	100.6	100.4
	" 28, 8.00 "	101.4	100.	100.2
	" 28, 10.00 "	102.	100.	100.2
	" 28, 12.00 m.	101.4	100.	100.6
	" 28, 2.00 p.m.	101.6	101.5	100.8
	" 28, 4.00 "	101.8	102.6	101.
	" 28, 6.00 "	101.8	104.3	101.7
	" 28, 8.00 "	101.8	104.4	101.5
	" 28, 10.00 "	101.7	104.4	101.6
	Very Large Swelling.		Large swelling.	Swelling.
After Injection.	May 29, 6.00 a.m.	102.4	101.6	101.
	" 29, 12.00 m.	102.9	101.4	101.2
	" 29, 5.00 p.m.	103.2	102.6	101.
	" 30, 6.00 a.m.	101.8	100.8	101.
	" 30, 5.00 p.m.	102.6	102.4	

* Mare in heat.

TABLE No. IV.

EXPERIMENTS WITH 0.5 c.c. MALLEIN.

	I.	Glandered, No. 25.	Glandered, No. 26.	Healthy, No. 27.
	DATE.	TEM.	TEM.	TEM.
Before Injection.	July 10, 8.00 a.m.	101.2		
	“ 10, 5.00 p.m.	101.4		
	“ 11, 8.00 a.m.	101.4	102.	99.6
	“ 11, 1.00 p.m.	101.4	101.8	99.8
	“ 11, 6.00 “	101.6	101.8	99.4
	Injected 0.5 c.c.			
When Injected.	July 12, 6.00 a.m.	101.2	101.2	99.4
	“ 12, 8.00 “	101.8	100.6	99.2
	“ 12, 10.00 “	101.4	101.2	99.8
	“ 12, 12.00 m.	101.6	101.8	99.2
	“ 12, 2.00 p.m.	103.	103.4	99.4
	“ 12, 4.00 “	103.4	104.2	
	“ 12, 6.00 “	103.2	103.8	99.
	“ 12, 8.00 “	104.	103.2	99.8
	“ 12, 10.00 “	103.8	102.5	101.
		Swelling.	Large Swelling.	Swelling barely perceptible.
After Injection.	July 13, 6.00 a.m.	101.8	100.	100.2
	“ 13, 12.00 m.		101.6	100.4
	“ 13, 6.00 p.m.		102.8	100.6
	“ 14, 8.00 a.m.		100.7	99.8
	“ 14, 4.00 p.m.		100.2	100.
	“ 15, 7.00 “		99.8	100.2

	II.	Farcy, Reinjected (8) No. 20.	Farcy, Reinjected (6) No. 21	Glandered, No. 34.	Glandered, No. 35.	Healthy, No. 33.	Healthy, No. 36.	Healthy, No. 37.	Healthy, No. 38.
	DATE.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM	TEM.	TEM.
Before Injection.	Aug. 26, 6.00 a.m.	99.4	99.9	102.8	101.8	99.2	99.6	99.8	100.
	“ 26, 12.00 m.	100.4	100.5	103.	102.8	99.9	100.1	100.4	100.
	“ 26, 6.00 p.m.	100.	99.6	102.8	104.3	99.9	100.8	100.	100.2
	Injected 0.5 c.c.								
When Injected.	Aug. 27, 6.00 a.m.	99.6	99.4	102.	101.8	99.6	100.2	99.4	100.2
	“ 27, 8.00 “	99.8	99.7	101.8	101.6	99.1	99.5	99.1	99.7
	“ 27, 10.00 “		100.3	101.3	101.4	99.	99.8	99.9	100.3
	“ 27, 12.00 m.	100.8	101.3	102.1	102.2	99.4	99.9	100.4	100.6
	“ 27, 2.00 p.m.	101 2	102.7	103.	103.	99.8	100.6	100.2	100.9
	“ 27, 4.00 “	102.8	103.2	103.6	103.4	100.5	101.	100.4	102.2
	“ 27, 6.00 “	103.	103.6	103.7	103.7	101.2	101.4	100.5	102.7
	“ 27, 8.00 “	103.	103.6	104.1	103.6	101.1	101.4	100.4	102.4
	“ 27, 10.00 “	103.	101.	104.	103.6	101.	101.5	100.4	101.4
		Swelling.	Swelling.	Large Swelling.	Large Swelling.	Slight Swelling.	Slight Swelling.	Slight Swelling.	Slight Swelling.
After Injection.	Aug. 28, 6.00 a.m.	101.4	101.	102.4	102.4	99.9	101.2	100.4	100.2
	“ 28, 1.00 p.m.	102.9	102.9	102.2	102.	99.8	100.8	100.3	99.8
	“ 28, 6.00 “	101.6	101.6	103.1	102.4	99.8	100.8	100.2	100.2
	“ 29, 7.00 a.m.	100.	99.4	100.8	100.8			100.2	99.8
	“ 29, 1.00 p.m.	100.2	99.8	102.2	102.			100.	99.8
	“ 29, 6.00 “	100.2	100.2	103.	102.8			100.4	100.2

	III.	Farcy, Reinjected (9) No. 20.	Farcy, Reinjected (7) No. 21.	Glandered, Reinjected (2) No. 34.	Glandered, Reinjected (2) No. 35.	Glandered, No. 39.	Healthy, Reinjected (2) No. 33.	Healthy, Reinjected (2) No. 36.	Healthy, Reinjected (2) No. 37.	Healthy, Reinjected (2) No. 38.
	DATE.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.
Before Injection.	Aug. 29, 7.00 a.m.	100.	99.4	100.8	100.8	102.2	99.2	100.2	100.2	99.8
	“ 29, 1.00 p.m.	100.2	99.8	102.2	102.	102.6	99.6	100.	100.	99.8
	“ 29, 6.00 “	100.2	100.2	103.	102.8	102.4	99.8	101.2	100.4	100.2
	Injected 0.5 c.c.									
When Injected.	Aug. 30, 6.00 a.m.	99.4	99.2	102.4	100.6	101.8	99.2	100.4	99.	100.
	“ 30 8.00 “	99.8	100.8	102.7	100.5	101.5	99.2	100.2	100.2	100.
	“ 30, 10.00 “	100.4	101.4	102.5	100.5	102.5	99.6	100.2	100.2	100.2
	“ 30, 12.00 m.	101.4	102.9	102.7	101.8	103.2	100.	100.7	100.6	100.
	“ 30, 2.00 p.m.	101.4	104.6	103.2	101.8	104.2	100.2	101.	100.8	100.6
	“ 30, 4.00 “	101.	104.6	103.5	103.4	104.2	99.6	100.8	100.6	101.9
	“ 30, 6.00 “	101.4	104.1	103.4	103.5	104.2	100.8	100.4	100.4	102.4
	“ 30, 8.00 “	101.3	103.4	103.8	103.	103.	100.8	101.3	100.6	102.8
	“ 30, 10.00 “		103.	103.2	102.8	102.8	100.8	101.4	100.6	102.4
		Small Swelling.	Large Swelling.	Slight Swelling.	Large Swelling.	Large Swelling.	Slight Swelling.	Slight Swelling.	Faint Swelling.	Small Swelling.
After Injection.	Aug. 31, 6.00 a.m.	99.8	100.6	102.	101.6	101.6	100.	101.2	100.2	100.2
	“ 31, 1.00 p.m.	100.7	100.4	102.4	101.6	102.6	100.4	100.8	99.8	100.7
	“ 31, 6.00 “	100.4	101.8	101.8	101.6	102.4	100.8	100.6	100.6	100.6

TABLE No. V.

EXPERIMENTS WITH ALBUMOSE.

	I.	Farcy, Reinjected (5) No. 20.	Farcy, Reinjected (4) No. 21.	Glandered, Reinjected (3) No. 23.	Healthy, Reinjected (5) No. 11.	Healthy, Reinjected (3) No. 17.
	DATE.	TEM.	TEM.	TEM.	TEM.	TEM.
Before Injection.	July 11, 8.00 a.m.	101.	100.2	100.2	99.2	99.
	“ 11, 1.00 p.m.	101.2	100.6	101.	100.4	100.7
	“ 11, 6.00 “	100.6	100.2	100.6	100.4	100.8
	.005 grm. Alb.					
When Injected.	July 12, 6.00 a.m.	100.	99.4	99.5	100.4	100.
	“ 12, 8.00 “	100.8	99.9	100.6	100.3	100.2
	“ 12, 10 00 “	101.	100.	100.8	100.8	101.
	“ 12, 12.00 m.	102.	101.	102.6	101.4	101.
	“ 12, 2.00 p.m.	104.	103.4	104.2	103.	100.9
	“ 12, 4.00 “	104.4	104.7	104.6	103.3	101.
	“ 12, 6.00 “	104.5	104.5	104.8	102.8	101.2
	“ 12, 8.00 “	104.2	105.8	105.2	102.8	102.
	“ 12, 10.00 “	105.	105.6	104.6	101.8	101.5
		Swelling.	Swelling.	Swelling.	Slight Swelling.	Slight Swelling.
After Injection.	July 13, 6.00 a.m.	103.6	104.	104.	100.	99.2
	“ 13, 12.00 m. .	103.8	105.	103.6	100.8	101.
	“ 13, 6.00 p.m	102.5	104.4	103.6	100.2	101.4
	“ 14, 8.00 a.m.	100.8	101.4	102.3	100.2	99.8
	“ 14, 4.00 p.m.	100.6	102.	102.4	100.6	100.8
	“ 15, 7.00 a.m.	100.2	100.5	100.6	100.8	100.

	II.	Farcy, Reinjected (6) No. 20.	Farcy, Reinjected (5) No. 21.	Glandered, Reinjected (4) No. 23.	Glandered, Reinjected (2) No. 26.	Healthy, Reinjected (2) No. 24.	Healthy, No. 30.
	DATE.	TEM.	TEM.	TEM.	TEM.	TEM.	TEM.
Before Injection.	July 21, 6.00 a.m.	99.4	99.5	100.6	99.	99.8	99.
	“ 21, 12.00 m.	99.	100.8	101.5	100.4	99.6	100.
	“ 21, 5.00 p.m.	98.8	100.6	100.5	102.	101.	99.5
	.002 grm. Alb.						
When Injected.	July 22, 6.00 a.m.	99.8	100.	100.8	100.	99.2	99.5
	“ 22, 8.00 “	101.4	99.2	100.8	100.	99.6	99.
	“ 22, 10.00 “	102.6	100.8	102.	100.8	100.	99.4
	“ 22, 12.00 m.	101.8	101.	102.	100.5	99.8	100.2
	“ 22, 2.00 p.m.	104.2	102.2	102.6	100.8	99.8	101.
	“ 22, 4.00 “	104.2	102.2	103.	103.2	100.	100.5
	“ 22, 6.00 “	104.	102.8	103.6	103.	99.8	100.6
	“ 22, 10.00 “	104.2	102.5	104.	103.8	99.4	102.6
		Small Swelling.	Small Swelling.	Large Swelling.	Large Swelling.	No Swelling.	Slight Swelling.
After Injection.	July 23, 6.00 a.m.	100.8	101.6	102.8	101.8	100.1	99.5

	III.	Farcy, Reinjected (7) No. 20.	Glandered, No. 31.	Healthy, No 29.	Healthy, Reinjected (2) No. 30.
	DATE.	TEM.	TEM.	TEM.	TEM.
Before Injection.	July 26, 6.00 a.m.	101.	101.2	99.5	100.5
	“ 26, 12.00 m.	100.2	103.	101.5	100.6
	“ 26, 5.00 p.m.	100.	101.8	101.3	101.2
	.002 grm. Alb.				
When Injected.	July 27, 6.00 a.m.	100.5	100.2	101.6	100.6
	“ 27, 10.00 “	100.6	101.4	102.8	100.8
	“ 27, 12.00 m.	100.8	102.		99.8
	“ 27, 2.00 p.m.	101.4	103.	103.	101.
	“ 27, 4.00 “	101.8	104.	102.8	101.5
	“ 27, 6.00 “	101.5	104.2	102.4	101.4
	“ 27, 10.00 “	102.	103.8	101.5	101.7
		Small Swelling.	Large Swelling.	No Swelling.	Slight Swelling.
After Injection.	July 28, 6.00 a.m.	101.2	101.8	100.2	100.
	“ 28, 12.00 m.	102.	101.7	101.2	100.2

CASES OF FAVUS CONTAGION FROM THE LOWER ANIMALS.

By S. Sherwell, M.D.,
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Physician, Brooklyn Hospital; Surgeon to Skin and Throat Department,
Brooklyn Eye and Ear Hospital..

It has occurred to me that the brief relation of sever
cases (four in the same family) of favus contagion from lowe
animals, might be of some interest to the Society, in vie
first of the prompt and easy recognition of the disease, an
the equally clear chain of evidence in connection with th
transmission thereof.

Mr. A———, a gentleman living in a suburban villa nea
Brooklyn, to whom I have previously been of service in r
lieving him of a chronic skin affection, came to me in gre
perturbation of spirit, December 3, 1891, bringing with hi
his two daughters, aged respectively about ten and twent
years, each of whom, otherwise in magnificent health, wa
suffering from a skin lesion or eruption of recent date, and i
both of whom the lesions were similar in situ, that is to sa
on arms, neck and bust. The symptoms were much mor
marked in the case of the eldest, who, when arms were e
posed, showed a patch of favus eruption on upper and oute
aspect of arms near deltoid region, particularly inflamed an
covered with sparse but evident scutula of the achorion—th
other patches in regions mentioned above, while evidently
the character of vegetable parasitic order, were not so we
marked, nor were they in the younger sister.

Recognizing the lesion, as it was easy to do at sight, I i
stituted inquiry as to whether they, the family, kept any pe
animals, and was told in reply that they had three dogs, gre
favorites, the smallest of which, a Scotch terrier, was th
special pet of the elder young lady, even sleeping on her be
and being constantly with her, and being fondled by her ; th
other dogs, a setter and a hound respectively, also were mad
much of by the whole famiy, and admitted freely to hous
etc. On asking if they did not scratch themselves a goo
deal was assured they did, of late particularly, acting as

ey had fleas, but they had, on examination, not been able to d that they were so infested; on further questioning, found at they had noticed, however, a poor condition of their ats, and on the little dog a patch behind the ear where the in appeared frayed, mouldy or mangy.

On question as to vermin about house, found they suffered om a veritable plague of rats and mice, particularly the lat- r, that they were quite bold, making their nests everywhere, d that traps were of little service in thinning their numbers, d that they had feared to use poisons on account of the gs, and, furthermore, that a curious circumstance had lately ppened—that one of the dogs had caught and been found aying with a poor sick mouse (from the description evi- ntly, one affected with severe favus eruption), which they the goodness of their hearts rescued from the dogs, and in eer pity for its miserable state allowed to escape.

The case was clear; after making explanation of the char- ter of the lesions, and their connection with the animals, I dered the dogs to be sent away, quarantined, and treated veterinary surgeon of the neighborhood, further directing em to use traps, poisons, etc., in fact everything possible to minish the number of the rodents, and to exterminate them possible, all of which was instantly set about. I instituted eatment of the cases in the family itself. The mother and young son were also found to be affected. The remedies ed were ol. cadini, a few drops in a one-half ounce each of hydrarg., five per cent. and ol. amydal. dulc, this to be rly applied after scouring with liniment saponis, somewhat lute, directing also the scalp and other capillary regions to anointed in moderate degree with the same union of oils. e cases all did satisfactorily, and in short time, so that up present date nothing more has been heard of recurrence that or similar lesions. The dogs, after about two months' arantine and treatment, are now also in perfect dermic alth.

I had asked the family to send me specimens of the sick ice if they caught any in traps, etc. They sent me two ry marked cases, with eruption most pronounced on head in both, but one affected in spots over fully one-half of su face—one of which (the first and lightest case), seeing tha Unna, of Hamburg, had been doing a good deal of microscopic work about that time on the achorion, I sent him, havin previously gutted it and rubbed in a little arsenious acid i abdominal cavity, enclosing it, as dry specimen, together wit preparation in small bottle of alcohol of a piece of sarcomatous tumor, he had by letter requested me for. Later o February, 1892, I received a letter from him, saying tha while it was undoubtedly favus, it had some unusual features of microscopic growth differing from his well know classification of F. griseus, F. celerior and F. sulphureus tardus. He sent as well a couple of tubes of pure cultures mad therefrom, which have been examined by various member of New York Dermatological Society, but which, to my less expert vision have no essential difference from that of othe favus. Certainly the microscopic appearance on the youn lady's arm was as distinct as well could be, typically yello and cupped.

I have had several cases in my practice of this parasiti disease, evidently from contagion from the lower animals, an beg to offer a photograph of one. A stableman being the patient, the patch in this case, as will be seen, is under the ey sharply defined isolated lesion; the scutula were absolutel typical and perfect. I scraped this case with dermal curett and applied liq. hydrargyri nitralis mildly, with cure following as a matter of course. In this case also, I asked him t trap and bring me any affected rats or mice he could get with the result that two or three days thereafter he brough me a mouse, which I yet have in case, mounted by a taxidermist of the vicinity. The patch in this case is of grayish yellow, and as in all cases I have seen is on the head. I hav invariably found the head and cheek the most affected par (in mice), whatever other regions were attacked, and this i a point which has for many years interested me.

It would appear that the irritation caused by the presence and growth of the fungus is very great in these lowe animals, and must lead apparently to almost continuou ratching on their part, so that in the case of these mice hen the head is affected, which I have found invariable, ey scratch and scratch, until not only the skin and subcuta-ous tissues are eroded, but even by the combined influence the irritation and scratching, I have found the calvarium places destroyed and the parasite affecting the brain and membranes, so that the little animals became wild with the itation and inflammation set up.

I remember very well many years since, in the family of distinguished jurist, among my clientéle, the young ladies the family, braver than ordinary, were wont to make fun a family of what they called crazy mice, who would come t when people were present, run up window curtains, and all manner of objectless things apparently, who had no ır when pursued, but would allow themselves to be caught th the hands, etc. They, at my request, sent me one. Its ad was covered with the favus crust, the calvarium worn ay to large extent, cerebrum exposed and apparently af-ted. No cases of contagion appeared in the family, and asures were soon adopted by my advice for the destruc-n of the surviving rodents.

As to contagion of other cryptogamic parasites, I have en many cases in individuals and families of trichophytosis ngworm), cats being the infecting media. The last, only ew days since, in an infant of less than six months, a mangy tle kitten picked up in the street, given to it in the crib to ay and sleep with, etc. The case was brought to my clinic; next visit the kitten was also brought at my request, and appearance justified the diagnosis.

The most interesting case of the kind I ever had was in a wish family of moderate means, where the whole of a nu-rous family of children, the eldest a girl of about fourteen, d a little female domestic not much older, slept in the same om on pallet beds, were found to be affected with circin-te ringworm. They had also a mangy kitten, evidently source of trouble, picked up by one of the family, and de a pet and bed companion, going to each bed as it t like. The amount and variety of circinnate lesions were astonishing. Some of their bodies looked like a veritable map of Polynesia. Death of the cat, and appropriate remedies were successful in these cases.

On reference to veterinary authorities, I find it stated that favus (honey-comb ringworm) has been noted also more especially as occurring in mice and rats, and in the animals who more or less make them their prey, as ferrets, cats, dogs, etc., in about the same relative order; the larger domestic animals are less frequently affected, horses seemingly least of all; the favorite sites of these parasitic growths in the latter would appear to be at and about region of the withers and bases of mane and tail. I should think, from analogy, that the hairy muzzle and roots of the ears should be carefully looked at when this disease is present, as it seems likely that a much more insignificant lesion in these situations would cause more discomfort to the animals than very much larger manifestations elsewhere. The iodide of sulphur, in combination with alkalies, seems to be the treatment most recommended by the authorities. I would venture to suggest that, as after or later treatment, at least, *constant saturation* of the parts with raw linseed oil to obviate its tendency to dry, and frequent washings with tar soap as being good treatment. Looking upon the oils in general, as I do, as in themselves parasiticides when applied, they, by their presence, preventing oxygenation of the moulds, and thus causing death of same.

REPORTS OF CASES.

"*Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.*"—Veterinary Record.

SALICYLATE OF SODIUM.

By Chas. W. Heitzman, D.V.S.

As there seems to be a tendency for veterinarians to wean themselves from the time-honored and much abused febrifuges, it will, perhaps, be in order to suggest the above-menoned as one worthy their attention. Sodium salicylate is evoid of irritant and poisonous actions, and, moreover, is ithout odor, and almost without taste. It resembles quinine its actions, but its medicinal effects are more active. In cute fevers one to two drachm doses, repeated every two ours until six or eight doses are taken, lower the frequency the pulse and decrease temperature from one to three degrees. In repeated doses it relaxes the bowels, but has no rect irritant action.

In rheumatic fevers it lowers the temperature, abates ain, and cuts short the attack. In laminitis, influenza, in ct, wherever an increase of temperature is present from constitutional disturbances, it is, more times than less, indicated. e have used it, with almost universal success, in the periodic tacks of influenza, associated with "La Grippe lung." We te several cases in which its use was beneficial.

No. 1. Acute Rheumatism. Was called to see an English tter; found point of left hind leg swollen, hot and painful touch. When made to move would hop on three legs. ough coat; no appetite; mucus accumulation in the corner the eyes; fœtid breath. Prescribed:

℞ Sodium Salicyl. ʒij.
Aqua distil ℥iij.
M.

Sig.—Teaspoonful ever two (2) hours. Also citrate of on and quinine three times daily.

In three days saw patient again; hind leg perfectly sound; ppetite improved, but front leg swollen. Again put him on e salicylate, and in twelve days made a complete recovery.

Case No. 2. A medium-sized mare; owner thought she d injured knee, as it was very much enlarged. Temperare, 106° F.; knee sensitive to touch; urine scanty and highlored; bowels costive; no appetite. Prescribed two drachms the salicylate every two hours; hot water applications and ndages to knee. Second day, temperature 104½°; general ndition improved. Fifth day, temperature 105°; left hock vollen, painful, etc.; swelling, soreness, etc., disappeared from ont leg. Continued the salicylate incessantly every two hours for the next three days and nights. Ninth day, temperature 101° ; excretions normal ; appetite good ; no swelling or soreness.

Case No. 4. Three colts with purpura as a sequel to catarrhal fever. Swellings about the sheath, abdomen and breast, and one considerably swollen about the head. Pulse feeble ; temperature 103.6°. Prescribed iron and ergot. At the end of first week (June 7th) no improvement, except the one with swollen head passed to the great beyond. Prescribed the salicylate in alternate doses with the iron. Did not hear from them again until the latter part of July, when owner said they had completely recovered and were in fine fix.

Case No. 5. A sorrel mare attempted to jump a fence, but succeeded only in piercing her breast to the depth of thireen or fourteen inches. Was brought to the hospital as soon as she was removed from the fence. Wound was dressed daily with with antiseptics, and for four or five days did very nicely ; then it began to swell ; discharge became offensive ; swelling extended to the mammary glands. Temperature from 103½ to 105°. Began the administration of the salicylate, and in four days temperature almost normal, and swelling about gone. In eighteen days was discharged from hospital.

EXTRACTS FROM GERMAN PERIODICALS.

By R. MIDDLETON, D.V.S., Philadelphia, Pa.

OBSERVATIONS UPON THE "RED DIARRHŒA."

Zschokke, of Zurich, received in 1890, from the district of Brauchli, a blood-mixed, slimy excrement, with the explanation that in this circuit an unknown disease of an epizootic nature had existed for some time past, and which, though not of sufficient malignancy to prove fatal, was so debilitating as to necessitate destruction.

Zschokke, in pursuance of this statement, instituted exhaustive experiments in the several towns suffering. The next summer he observed the same disease in another valley, also here existing as an epizootic.

From a meeting of the veterinary associations it was arned that this affection was then very prevalent, and that those places where only sporadic cases were seen a short me back, it now flourished as an epizootic. From these itherings Zschokke found the diarrhœa to be propagated roughout the whole canton of Luzerne.

Cattle going seldom upon the meadows, and especially ung animals from one to one and a half years old, are fected between the months of July and September.

Most cases occur in high elevations ; in these locations the alady is of greater virulence and more frequently terminates death, than when occurring in valleys.

In spite of its epizootic character it only affects individus of a large dairy ; only one veterinarian reporting it as ving attacked every animal in a collection. There is no ound to establish the probability that it is transferrable om one animal to another. The flesh of destroyed subjects eaten without disadvantage, and is in no wise considered ejudicial to the public health.

Concerning the manifestation of any infallible symptoms, may be said that from the incipiency to the termination of e disease no pathognomonic sign is vouchsafed. A pro- omic stage, with fever, loss of appetite and debility, which company all mycotic diseases, is not to be recorded.

The first and most noticeable symptom is the diarrhœa, hich, in one or two days, becomes bloody. The feces are quid, possessing a strong odor ; at the beginning slimy, later, ownish and more fluid. The acme of the affection occurs from four to eight days ; at which time much trismus is oted, followed by small quantities of macerated membrane ixed with feces and coagulated blood-clots of various sizes. rolapsus of the rectum is not seldom, in which cases the ctal membrane becomes congealed and hypersensitive. rdinarily the blood disappears from the feces in two or ree days, but the diarrhœa itself may continue as many eeks. The general health does not seem to be deteriorated the passages. The patients imbibe food and are very irsty ; the skin becomes dry and the visible mucous membranes are pale; emaciation, more especially at the flank proceeds at a rapid rate. The eyes are retracted within the orbicular cavity early in the affection. The temperature is never dangerously high, remaining below 104°; pulse, on the other hand, is accelerated to 60, and the animals are usually weak.

In individual cases the symptoms are more severe Huber found a one and a half year old ox lying upon the ground, very weak, with evacuations occurring every hour Temperature, 122°; pulse, 38; stomach peristalsis retarded intestinal sounds suspended. As the temperature subsided the pulse rate increased, until, two days later, the thermometer indicated 105.8°, the pulse, 90; the animal was slaughtered.

The weakness is a very prominent symptom, whereby the gait is made uncertain and swaying. Milk secretion reduced. Colic symptoms are not to be noted. The patients are contracted in the lumbar region and constantly change the posterior limbs. The course and termination of the affection is variable; in the majority the same subsided in five to ten days. In numerous instances medicinal aid was not indicated. In other cases, anorexia and diarrhœa extended over a period of several weeks, causing great emaciation; in these patients the usual agents availed nothing. A fatal termination is not often recorded.

Huber handled thirty-six cases, under which were ten seriously ill, and four which necessitated slaughtering. Of fifty-nine cases observed, cattle, six died apparently exhausted. The therapy consisted of mucilaginous drinks, preparations of opium, astringents and disinfectants such as creoline. In addition, dry food, meal water, bread and red-wine.

The post mortem exposed little of a distinctive nature beyond a general anæmia, erosions of the fourth stomach and large colon. The mucous membrane of the small intestine is neither swollen or reddened; it contains no abnormal fluid. Contents of the psaltery-manifolds dry and hard, as in indigestion. The colon membrane was either longitudinally creased or nodular; it was covered with thick mucous, striped with blood. By irrigating the latter membrane, small

hreds of epethelial tissue were dislodged from the mucosa.
he submucosa and muscular fibers of the lower bowel were
wollen, loose and congested ; numerous ecchymoses were
isible throughout the expanse of membrane. In the rectum
umbers of blueish lines, the dilated veins, were apparent.
n individual herds, wounds along the colon or rectum, which
ight be considered as the source of the blood in the fecal
ischarges, were not found.

Regarding the ætiology, it may be said that the plurality
ttribute the lesions to wet seasons and wet grass, and
ssert that in many years of drouth, when hay is fed, there is
o "red diarrhœa." This, nevertheless, is not absolutely
ue, since the disease has also counted its victims in dry
eather, and, in some seasons of exceeding wet, has not been
een. According to Huber, ranunculus acris and ægopodium
rodagraria are more abundant in the years of this malady, i.
., they cause the affection. Opposed to this, Zschokke re-
orts the affection occurring when the pastures were free of
ese growths. Why only one or two from a whole dairy
ould suffer, and others of the herd enjoy immunity, is
qually as little to be explained. Contemporary literature
ffers no solution of the perplexity.

Zschokke discovered in the masses of blood and mucous
nt him, an immense number of peculiarly refractive, round
ells, possessing no nucleus; these he considered coccidien.
this relation he was confirmed by others using the Susdorf
ethod of examination, and also by the procedure of coloring
reparations advanced by Rieck in the "Dtch. Zt., f. Thier."
all examinations at subsequent periods and outbreaks,
ese round cells were invariably present; in the excrement
healthy animals in the same stable no such cells could be
etected. The cells always possess the same morphological
aracteristics, and are the same size. The conclusion that
me dependent relationship exists between the presence of
ese coccidien and the appearance of the affection is justifia-
e. In the shreds of membrane, by means of a 250 enlarge
ent, there were from 50 to 100 examples of the cells in the
ld of vision; these were more abundant in the detached

rectal membrane. In a piece of the latter, 1 mm. long and 0.1 mm. thick, 1,500 coccidien were counted, calculating from this there would be 150,000 to the square millimeter, or 15,000,000 to the square centimeter. These coccidien are oval, and vary in thickness from 0.01 to 0.22 mm. They are homogeneous, refractive and of double contour. Haemotoxylin does not color them. When aniline colors are used, a nucleus thrice as large as that of an epethelia cell becomes visible, which completely occupies the cell. Also in coccidium oviforme and coccidium perforans, the nucleus very often disappears by becoming the same size as the cells. Zschokke did not observe the development of the cells to sporocysts.—*Schweiz. Arch.*, *Bd.* 34, *H.* 1.

RECTAL POLYPI IN A FOAL.

In August, we were driven by the owner to see a one-year-old foal which for the last few months suffered recurrently from colic. This had lately become more intense in its attacks, so that in the weeks immediately preceding our visit, the animal declined in flesh and general health. Up to this time the usual domestic purgative medicines were given with beneficial results, and for this reason a veterinarian had not been called. The character assumed by the disease in the last few days had become more serious. The strongest anti-costive agents acted but mildly; clysters of lukewarm soap water only induced the passage of single, hard pellets of manure, covered with a whitish croupous coat.

Status Præsens.—The colt, clothed in long, lustreless hair, was in a badly nourished condition; the countenance heavy, and languid generally. Food and drink when held before the patient were untouched. When in the stall the animal continued unquiet, flexing the neck and observing the abdominal sides, now and again reclining. Upon the gluteal region and neck, small expanses of perspiration; ears and extremities cold; respiration labored, and to a slight degree increased in frequency; temperature 102.5°; pulse full, and rating 70 per minute at the maxillaris artery; visible mucous membranes edder than normal; stomatic membrane dry and pale; peritalsis. especially of the colon, comparatively sluggish; abdoıen distended and in a tympanitic state; the foal defecates t long intervals, and accompanied by sundry grunts, a few ard, small and coated pellets of feces, assuming an extended osition the while, as though about to urinate.

From these observations we concluded that we had to do ith colic, associated with proctitis chronica. Manual examıation of the rectum exposed the cause of this chronic and pparently dangerous colic. After proceeding forward about even inches, our further progress was impeded by a contriction of the bowel lumen, so complete as to scarcely allow ıe introduction of a single finger. This obstruction was onstituted by six independent, pediculated tumors that threw ıe membrane in a fold which circumscribed the cavity. hese formations, which we later determined to be polypus bromas, were partially disintegrated by ulcers.

By judicious and continuous pressure with the oiled hand, e succeeded in passing the stricture and entering a much ırger cavity of the colon, whose walls were greatly thickned. This enlargement of the lower bowel was practically ıe rectal reservoir; it was occupied by closely packed manre which we removed. The new formations being beyond ıe reach of the bistoury, and being, moreover, in a locality here hemorrhage could not easily be controlled, we decided o procure a corrugated thimble, such as is used in obstets, and with this instrument sever the insertion of the base ıto the membrane.

This being done, we constructed an impromptu ecraseur, pon the spur of the moment, from the canula of a cœcal ocar and a bit of wire. By great effort, though the patient t this point was very unquiet, we succeeded in extirpating ıe growths. Contrary to our anticipation, a considerable emorrhage followed, which, however, subsided after the inoduction of a tuft of oakum dusted with

℞ Cupri. sulph. pulv.,
Ac. tannici pulv., aa.

After the lapse of one half hour this was removed, and the rectum irrigated with a solution of creolin in oak bark decoction, 1:20, repeated hourly. On the first day only bran wate was permitted the patient, followed on the second day b good hay.

After eight days we removed the balance of the polypi The condition of the animal improved, and after six weeks during which time we occasionally saw the case, was cured.—*Berliner Th. Woch. No.* 43, 92.

RETENTION CYST UPON THE EPIGLOTTIS.

A troop horse that had been taken as a reserve, only to b used during the season of maneuvers, appeared slow and inactive, ate with great deliberation, and for times together hel the head extended on a horizontal line with the dorsal vertebræ.

Eight days after the departure of the troop, while being ridden at a walk, in the various exercises, the animal becam weak, swayed considerable and fell; in a short time regaine composure and stood.

From here the animal was taken to the nearest camp where it again plunged to the ground and expired.

The post-mortem, undertaken on the next day, exposed n lesion of the abdominal cavity. The lungs contained air were red in color and well supplied with blood. The laryn was nearly shut from view by a cyst of enormous dimensions which lay over the glottis, being securely attached to the anterior surface of the epiglottis.

This formation, altogether about the size of a hen's egg was filled with a transparent, reddish-gray fluid. The exterio also reddish in hue and wrinkled, seemed a continuation o the pharyngeal mucous membrane, while the interior possessed nothing noteworthy.

The pathological institute attached to the Berlin University, pronounced this growth to be a retention cyst—*Ztsehr f. Vet. K.*

PARTIAL BLINDNESS FROM ACUTE ENCEPHALITIS.

On the fourteenth of August, a twelve-year-old horse exibited symptoms of encephalitis, to wit: hanging of the ead, pressure with same toward left, retarded pulse, fever nd general immobility. On the third day periodic recurences of the irritation, patient fell to the floor, arose, pulled pon the halter; contracted pupil and staring eyes.

The animal was removed from the stable to an open plot f ground, and here for four days ice bags were applied to the ead, and pilocarpine injection made. On the tenth day the erebral symptoms had subsided.

Later the same horse again came under our supervision, and t this time the right eye possessed a peculiar aspect; the phthalmic examination yielded no lesion of the pupil, lense r conjunctiva, but upon the retina complete atrophy of the ptic nerve. This is directly traceable to a disturbance of ie optic centers due to the cerebritis.—*Ztsch. f. Vet. K.*

VARIOUS EXTRACTS.

By Wm. S. Gottheil, M.D.

Specially written for the American Veterinary Review.

oot and Mouth Disease in the Human Subject. S.

Siegel (Dtsch. Med. Woch., 49, 1891) has studied an outreak of epidemic stomatitis in the neighborhood of Britz. he symptoms were as follows: 8–10 days incubation; then iills, dizziness, pains in the gastric and hepatic regions, freuently jaundice. Temperature 101°. Mouth symptoms a eek later; swelling of tongue, with yellow or black coating, velling of gums, fetor, loosening of the teeth, painful swelligs of the lower jaw bone and smaller vesicles upon the dges of the tongue and the lips, later, causing superficial asions. An exanthem on the forearms and legs consisting vesicles or even petechiæ was present. The fever disapears when the eruption breaks out, and, with proper treatent, the malady ends in two weeks; but weakness and ieumatic pains persist for eight weeks longer. In exceptional cases the disease may last a year; and in very severe attacks there occur partial necrosis of the tongue, hemorrhages from the gums, etc. The liver is always swollen, and in females menstrual irregularities are the rule.

Post mortem examinations were made of seven cases, and cultures were made from the liver, kidneys, etc. In every case a certain microbe, a short, egg-shaped bacillus, easily grown in the ordinary nutrient media, and readily stained with the usual coloring agents, was obtained. Inoculation experiments with the cultures were entirely successful. Every animal on which it was tried became affected with foot and mouth disease in more or less severe form.

The vegetable parasites—non-microbic—that are transmitted from animal to human beings, and vice versa, by R. Blanchard. (Progres Med., 1891. Nos. 50 and 52).

B. enumerates eight kinds:

1. *Achorion Arloingi* (Busquet, 1891)—transmitted from mouse to cat, and from cat to man, causing Favus.

2. *Achorion Schonleinii* (Remak, 1845)—the parasite of favus in fowls (the Epidermophyton Gallinæ of Megnin), and causing Favus Herpeticus in man.

3. *Trichophyton depilans* (Megnin, 1878)—the Ringworm of cattle, and transmitted to man as ordinary Ringworm. Gerlach has successfully inoculated the fungus on horses and dogs.

4. *Trichophyton Tonsurans* (Malmsten, 1848)—transmitted by horse, dog and cat to man.

5. *Actinomyces Bovis* (Hart, 1877)—found in man, cattle, horses and pigs. All receive it from the graminaceous plants which bear the active parasites.

6. *Microsporon Audouini* (Gruby, 1843)—the parasite of Alopecia areata. It causes the Alopecia of cattle and cats. It is transmissible from man to man, and probably from animals to man.

7. *Lepocalla repens* (Eklund, 1883)—said to be the cause of Psoriasis. Is transmitted from man to man, and also from man to animals (Lassar). Eklund asserts that it is specially common in coachmen.

8. *Aspergillus fumigatus* (Fresenius)—common in pigeons,

causing destruction of the lungs. Causes the pseudo-tuberculosis of the Paris bird fanciers, whose sputa contains the characteristic mycelium. The careless way in which these fanciers live with their stock renders infection very probable.

Blanchard recommends the isolation of all animals sufferng from the above diseases, and the destruction of everything with which they have been in contact.

Dr. E. Neisser (Berl. Klin. Wochen, April 4, 1892) reports a case of Chronic Glanders in a man aged 20 years. In September, 1890, a tumor appeared on his left cheek, and by December had developed into a large abscess. A tuberculin cure was then tried, under which the cavity and sinuses healed with astounding rapidity. In January, 1891, purulent otitis and Rhinitis developed, with another abscess on the flexor surface of right forearm. Other similar tumors appeared during the spring on the lower jaw and in the right axilla. Then came ulcerations on the mucous membranes of the gums, with hard and infiltrated edges. The septum nasi became affected, and was perforated, and a thin fœtid ecretion appeared. At last the entire visible respiratory mucous membranes were studded with ulcers of varying size; n the deepest ones the subjacent cartilage and bone being markedly affected.

The diagnosis from tuberculosis and syphilis was made by culture and inoculation experiments, and were conclusive. The patient recovered under an energetic iodide of potash treatment.

According to Ballinger the mortality from chronic glanders in the human subject is at least fifty per cent., and not many cases are recorded. Iodide of potash has done good service in the cases of Hallopeau and others.

M. R. Sabouraud has made cultures and experimental inoculations from M. Besnier's recent case of Farcy of the face, with complete success. The experimental proof of the existence of this disease is so simple that it should be employed s a diagnostic aid in doubtful cases. (Annales de Derm., et en Syph., May, 1892.)

M. Bang, professor at the veterinary school of Copenhagen, has succeeded in producing a substance, Mallein, which possesses toward Farcy the same properties that tuberculin does as regards tuberculosis. It was tried on 14 horses Two of them were manifestly glandered; to two others, who had been in immediate contact with them, but who had not as yet shown any sign of glanders, injections of mallein were given; at the end of 24 hours there was a very marked reaction. The autopsy showed glanders of the lungs.

To the ten remaining horses the liquid was also injected but no reaction followed.

Bang withholds further particulars until more researches have been made. (Letter to E. Besner. Annales de Derm et de Syph. May, 1892.)

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Keystone Veterinary Medical Association was held at Philadelphia, September 13 1892. Meeting called to order by the President, Dr. W Horace Hoskins. Minutes of June meeting were read and approved. The Treasurer reported $14.14 in treasury, with $70 due from members. The Secretary reported that the attendance of members during the year was up to the average of previous years. There was good work done by the Association; some excellent papers, as well as a great number of cases cited, that were instructive. The President made some very pertinent remarks regarding our duty to our Association, to our profession, and to one another. They were to the point and appreciated.

Dr. G. Webster read a paper on "Abortion," as follows:

Synonyms: Slipping, dropping, slinking. When pregnancy is interrupted by the expulsion of the ovum or fœtus, before it has attained sufficient development to live external to its parent, abortion is said to occur; but when the fœtus is expelled before the ordinary period, yet with the organs sufficiently developed to live for at least a time, premature birth is said to have taken place. In our practice there is no well-defined limit between abortion and premature birth. Abortian may occur at any time during pregnancy, up to within a month of the normal time. It is more often seen during the first half of pregnancy, the ovum often escaping without being noticed by the owner or affecting the health of the animal.

In the later stage, or last few months, after the fœtus has developed to some size, we often have serious trouble, not only in delivering the calf, but also incurring a loss to the owner as a milch cow, she seldom doing so well that season, and is very liable to go through the same performance the next time she gets pregnant. Causes: These are many, and are divided into two classes, (1) sporadic or accidental, (2) enzootic or epizootic. When cases occur here and there, over a wide extent of country, without any relationship as to the cause, they are termed sporadic or accidental. The causes of these are numerous, and may be classified as external and nternal causes.

External causes: Atmospherical changes, irregular seaons, sudden changes from hot to cold, or *vice versa.* Many observers have noted that a long-continued cold or hot spell is less productive to this complaint than one wet, old or frosty night in autumn succeeding a hot day. A very frequent cause is in the food; where the food is of bad quality, ot being harvested properly; may be due too to much rich od, causing an accumulation of fat in uterus. I myself had case only a few weeks ago due to this cause; the fatty mater had accumulated in lower portion of uterus, and had oosened the fœtal membranes from the cotyledons. Bad, lthy water which our cattle are often compelled to drink; rainage water which has stood until it is stagnant. Blows pon the belly from other cattle, or attendants, jamming hrough narrow passage-ways, being knocked about in transortation, excessive exercise, sudden fright, excitement from eing chased by dogs, violent purges.

Internal causes: In some animals there appears to be a endency to abort more than in others; they do so without any apparent cause, and without any constitutional trouble being noticed. The most constant internal cause is from some disease of the animal, where she has a high fever for some time, and where there is coughing, viz.: As in bronchitis pneumonia, pleurisy, tuberculosis, and other diseases where the pain is excessive. A tubercular condition of the uterus I believe is a very frequent cause, as it is often noticed in animals of this class.

Symptoms: The symptoms vary; in some they are so slight as to pass unperceived by anyone, while in others they are very serious. This usually depends upon the time that abortion takes place, whether at first or second stage of gestation. When abortion takes place during the first few months, the cow may appear to the stableman as well as any of his herd up to within a short time of aborting; ofttimes when this trouble happens at night there is no sign the evening before, she eating and drinking as usual; and the owner is often at a loss when finding a calf behind the cows to know to which it belongs, as the mother will take no notice of it whatever, often trampling it under her feet and showing no signs of distress.

If the cow is noticed by an expert the day before dropping her calf he will detect an enlargement of the vulva, with slight falling in of the flanks, and some uneasiness upon the part of the mother; at times a discharge from vulva of a thick ropy fluid; the fœtus will often escape with this fluid. In what is termed the laborous or difficult abortion, which is caused from blows, kick, or hook from other animals, the symptoms are well marked; ofttimes causing a great amount of suffering, depending much upon whether the fœtus is alive or dead. In these cases the veterinarian is called in to see an animal with the history that she is due to calve in two or three months, has been feeding well until a few days before, when he noticed her looking dull and at time uneasy, lying down and getting up, looking around at her sides; from her movements he thinks she has the colic. Upon examination by the veterinarian he will notice a peculiar expression about face and eyes; the pulse is quick, small and hard, respirations quickened, will give a strain with a groan. At this time he may notice a whitish discharge, which later turns to a yellow or reddish hue; by watching the abdomen he will see the fœtus, if alive, in violent motion. Soon after this we will have the symptoms of a normal parturition, viz.: The uterus begins to contract, the expiratory muscles acting in conjunction therewith. The extent of these labor pains depends much upon the strength of the animal and suddeness of the attack. The first result of the straining is emptying of the rectum and bladder; next dilation of os uteri and protrusion of membranes into the vagina, then through vulva externally. As the water-bag ruptures the pains are excessive and powerful, soon expelling fœtus—sometimes with all the membranes, but oftener they have to be removed by the hand with difficulty. Where the animal is poor and weak external force is often necessary.

Epizootic or infectious abortion: Epizootic or infectious differs much from the sporadic form in affecting whole herds of pregnant animals in one locality, and will occur year after year without any abatement in spite of anything that can be done, and even without finding any cause for the outbreak, thus making it a great scourge to cattle-raisers and farmers. The causes that have been advanced are very conflicting. As ong ago as the last century, contagion or infection was believed to be the principal cause of this trouble. It was oberved if one cow in a stable aborted the others usually folowed suit. In my own practice I have a client who had a ne herd of grade cattle, and knew nothing of this disease, never having anything of the kind in his stable. He went to drove-yard and bought a fine-looking cow, which, after beng on his farm a few weeks, aborted. Within a few months ll of his pregnant animals aborted, and have been doing so ver since.

In experiments performed by Franck, of the Munich Vetrinary School, it has been established by microscopical inestigation that on the lining membrane of the vagina, and hat of the vulva, there is constantly found a minute fungus mixed with the mucus, in every respect similar to the lepothrix buccalis, being, in fact, a kind of bacterium.

Toward the period of parturition these bodies become abundant and appear to concur in the decomposition of the fœtal membranes, and their expulsion. Franck has shown that by smearing the vaginal canal of a pregnant animal to a certain depth with this matter from the expelled membranes of one which has been diseased, abortion can be induced.

Symptoms: It is rarely that this form of abortion takes place before the fourth month of gestation; is mostly in fifth and sixth, but may be later. This form of abortion is mostly without any effort or excitement upon the part of the mother, the fœtus mostly still-born. Diagnosis is sometimes easy, but often is very difficult, as we are often asked by owners if such and such a cow is likely to abort, which is very hard, if not impossible, to answer, as she may show no outward signs, but still may abort in a few days. This puts the veterinarian in a position to be condemned, for if he had made his diagnosis correctly at this time it might have been prevented.

Another question asked is, has such a cow aborted? In the absence of fœtus or fœtal membranes it is also hard to answer correctly.

Treatment, preventive and remedial: Preventive is due to knowledge of the cause, if it can be found. First and most important is cleanliness. The shed or stable should be well ventilated and drained, allowing the air to pass through at least two hours every day; should be whitewashed and disenfected after an animal has aborted, so as to kill the germs and smell. The animal herself should be removed from the rest of the herd for three or four weeks; the stableman, after attending to her, should be careful and not go among the other cattle without going out in the fresh air for a while. If a cow shows any sign of aborting she should at once be removed by herself. Abortion can sometimes be prevented if seen early enough by giving narcotics, and keeping perfectly quiet for a few days, giving light, sloppy food. If when we have arrived and found the water bag bursted the only thing that can be done is to give the animal ample time to expel her offspring, which, if we find she cannot do, help must be given. The afterbirth should be removed at once, as it is asier gotten away at this time, and with less harm to the nimal.

A vote of thanks was tendered Dr. Webster for his able aper.

There was a lively discussion on the paper, particularly ıe part relative to the fatty deposits in the uterus.

The President appointed Drs. Bridges, Goentner and .ooker delegates to the United States Veterinary Medical .ssociation, to be held in Boston, commencing September)th.

The following officers were elected to serve for the ensu- ıg year: President—R. G. Webster. Vice-President—J. . Ferley, Jr. Secretary—W. S. Kooker. Treasurer—Chas. . Goentner.

On motion, the election of Trustees was laid over until ›xt meeting.

Dr. Hoskins introduced the newly-elected officers with ›propriate remarks.

Dr. Webster responded, thanking the members for the ›nor conferred, and hoping each member would do his duty .e coming session.

On motion, adjourned.

W. S. KOOKER, Secretary.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

Meeting called to order by President Hoskins. Roll call, 20 embers present, as follows: Drs. Collins, Diemer, Drei- llis, Foelker, Gladfelter, Hart, Hoskins, Keelor, Keil, Kook- , Michener, Pearson, Radley, T. B. Rayner, J. B. Rayner, idge, Rohn, Shaufler, Smith and Timberman. There were veral visitors present, also delegates from New Jersey, Dr. ng from the Keystone, and Dr. Eaves of Wilmington, Del.

Minutes read and approved.

An able address was delivered by the President.

The Board of Censors acted upon thirteen applicants. velve passing as follows: A. H. Dorney, V.S., Ont., Walter Hart, D.V.S. (Am.), V. B. Weaver, George C. Blaker, D.V.S. (Am.), Charles Harrick, M.R.C.V.S., Francis Allen, M.D.V.S., Jas. C. McNeil, V.M.D., John Doris, Jr., D.V.S. (Ohio), Samuel J. Foelker, V.S. (Ont.), W. G. Benner, V.S. (Ont.), J. F. Fearley, Jr., D.V.S. (Am.), Wm. L. Nunan, D.V.S. (Am.). David Martin laid over until March meeting, as he was not present to appear before the board of censors.

As the Association has been under increased expense this year, owing to printing and prosecutions, etc., the Board of Censors recommended that an assessment of $2.00 per member be made, which was carried.

They also recommended that Dr. Gotleib Myer, of Pittsburg, be expelled for false registration, which was passed.

Dr. J. C. Thompson's letters having been returned to the Secretary, it was found that he had moved to England, his name to be acted upon at March meeting.

The Committee reported the resolutions regarding Dr. Fretz's sudden death.

The Committee on Intelligence and Education reported through Dr. Deimer.

The Committee on Legislation reported through Dr. Kooker.

The Committee on Sanitary Science reported through Dr. S. J. J. Harger.

There was a motion passed advising the Committee on Sanitary Science and Committee on Legislation to act in conjunction with city authorities and others in striving to get a law passed governing inspection of cattle.

The new amendment, calling for a two days' meeting at the annual meeting, was carried.

There was a motion passed to expel a member for nonpayment of dues. Which motion being reconsidered, was laid over until next meeting.

Dr. Hart offered an amendment to make yearly dues $2.00, payable half yearly.

The following bills were presented: Dr. Hoskins, $90; Dr. Waugh, $2.50; Dr. Ridge, $39.38.

Dr. Pearson read an essay on "Tuberculosis in Cattle."

Dr. Waugh being absent, his brother demonstrated the manner of casting in operating upon an cryptorchid.

Dr. Bartholomew's paper was not presented.

Dr. J. T. Butterfield was not present, but sent a paper on
Intussusception."

Adjourned to meet in Philadelphia in March.

W. H. RIDGE, *Corresponding Sec'y.*

OBITUARY.

ROBERT WOOD, V.S.

Whereas, Almighty Providence has seen fit to take from
ong us by death, Robert Wood, V.S., and whereas, he has,
one of the oldest members and organizers of this Associa-
n, ever proven himself an estimable gentleman, an earnest,
nscientious worker for the elevation of, and a high honor to
r profession.

Resolved, That we, members of the United States Veterin-
y Medical Association, recognize in his death a keen sense
loss to our profession and to this Association. His death
uches us still more deeply as a personal friend, whose loss we
all ever deplore, and whose example in life we shall strive
emulate ; and

Resolved, That a copy of these resolutions be spread upon
records of our Association, and that copies of the same be
nished to the *Journal of Comparative Medicine,* and the
ERICAN VETERINARY REVIEW for publication.

GEO. BRIDGES, D.V.S.

Whereas, Almighty Providence has seen fit to take from
ong us by death, Geo. Bridges, D.V.S., and whereas, he
s, as a member of our profession and Association, ever
oven himself an estimable gentleman, an earnest, conscien-
us worker for the elevation of, and a high honor to our pro-
sion.

Resolved, That we, members of the United States Veterin-
Medical Association, recognize in his death a keen sense
loss to our profession and to the Association. His death
ches us still more deeply as a personal friend, whose loss we
ll ever deplore, and whose example in life we shall strive
emulate ; and

Resolved, That a copy of these resolutions be spread upon the records of our Association, and that copies of the same be furnished to the *Journal of Comparative Medicine*, and the AMERICAN VETERINARY REVIEW for publication.

V. T. ATKINSON, V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, V. T. Atkinson, V. S., and whereas, he has, as a member of our profession and Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen sense of loss to our profession and to this Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate ; and

Resolved, That a copy of these resolutions be spread upon the records of this Association, and the same be furnished to the *Journal of Comparative Medicine* and the AMERICAN VETERINARY REVIEW for publication.

JAMES L. KIDD, D.V.S.

Whereas, Almighty Providence has seen fit to take from among us by death, James L. Kidd, D.V.S., and whereas, he has, as a member of our profession and Association, ever proven himself an estimable gentleman, an earnest, conscientious worker for the elevation of, and a high honor to our profession.

Resolved, That we, members of the United States Veterinary Medical Association, recognize in his death a keen loss to our profession and to this Association. His death touches us still more deeply as a personal friend, whose loss we shall ever deplore, and whose example in life we shall strive to emulate ; and

Resolved, That a copy of these resolutions be spread upon the records of our Association, and the same be furnished to the *Journal of Comparative Medicine* and the AMERICAN VETERINARY REVIEW for publication.

POSITION WANTED.

Wanted by a Graduate of the Ontario Veterinary College a situation as assistant to man with general practice. Address "C. M.,"
care Sabiston & Murray, 916 Sixth Ave., New York City.

AMERICAN VETERINARY REVIEW,

no 9.

DECEMBER, 1892.

EDITORIAL.

TO OUR SUBSCRIBERS.—And not alone to our subscribers, t to our American brethren in general, we feel in duty und to address this notice. With three numbers more, the teenth volume of the REVIEW will be completed. With a rospect of sixteen years of regularity and punctuality in monthly appearance, with a testimony of its interest and ue, as manifested by numerous letters of approval in our ıds; with a large amount of what, without boasting, we y claim to have been good work, or how could it have vived so long? With all this, the question is importune- ressing itself upon us, and must also be referred to the mbers of the profession at large, "Is it worth while to in the seventeenth volume, or is not this a good point at ch to stop?"

Established under the patronage of the United States erinary Medical Association, the REVIEW has labored d in behalf of the profession, of the schools, of the socie- of the individual practitioner, and has been always ready ever ambitious to raise high the flag of our profession, to sound the bugle to the good tune of "Excelsior." It thus fought the fight of progress and advancement. hout reference to considerations of selfish interest or rea- ble prospect of financial success, and yet, after so many s of laborious effort, and it may also be said of successful useful existence, the questions we are propounding must nswered and answered *at once.*

The business management of the REVIEW reports an enormous deficit in its returns. Subscriptions are due which have stood for years, and they have accumulated to such an amount that it has become a question of ridiculous self-sacrifice to continue. In plain words, the situation resolves itsel into this query: Shall the veterinarians of the United States continue to receive, read, profit by, and enjoy their REVIEW *gratis*, or will they honestly pay for what they are glad to get? If among the 3,000 veterinary surgeons in the United States there are enough to support a regular organ of their profession, now is the time for them to say so.

Will gentleman who are in arrears (which now aggregate the respectable amount of $3,000) kindly send their dues tc the publishers?

Ignoring this call will mean the suspension of our publication.

THE NATIONAL VETERINARY COLLEGE.—The announcement of the establishment of this organization, contained ir our last issue, seems to have elicited a feeling anything bu approbatory of the undertaking, or friendly to the gentlemer connected with it. We have shown by the publication o the resolutions of the Philadelphia Veterinary Society, in the same issue, our willingness to open our columns to the profession for the free discussion of this subject, and this mus have been understood as we intended it to be if we trul comprehend the intent of two letters sent to us for publication by Dr. A. E. Conrow, Secretary of the Philadelphi Veterinary Society, and which will be found below. W hope that other expressions of opinion may follow, for th subject is one of no little importance, and the free comment of influential veterinarians may powerfully influence the cours of the new management. We reserve for ourselves the righ to consider it at a later day. The text of the letters alread received is as follows:

IOWA STATE BOARD OF HEALTH.

AMES, IOWA, October 7th, 1892.

A. E. Conrow, M. D.

DEAR SIR:—A copy of the resolutions adopted by the Philadelphia Veter nary Society has been received at my office. I have also received the announcement of the Washington Veterinary School.

Your Society could not have experienced more surprise and disappointment n the receipt of that document than I did. I feel that the veterinary profes- ion of this country, and especially those who have given many of the best years f their lives in an honest endeavor to elevate the cause, had a right to expect ther and better things from that source. I was of the opinion we had just ached a point in the history of veterinary matters in the United States when l the better influences would be exerted in the direction of more thorough urses of study, and when the lecture fee would cease to constitute the "long lt want" that impels to the organization of a new college. I had hoped that ith the recent move of the United States Veterinary Medical Association in king for higher qualifications for membership would follow a change in the rriculum of every veterinary school in this country advertising a two years' urse, and yet laying claim to a respectable fellowship among veterinary col- ges. But it never occurred to me to entertain a fear that those in high official sitions, those whose station best fits them for giving force and effect to this ovement, should be the first to aid in balking it.

I am in thorough accord with your Association in its unqualified protest ainst any system which recognizes twelve months' college work as adequate secure a college degree.

I am yours very truly,

M. STALKER.

WHITE PLAINS, N. Y., October 9th, 1892.

. A. E. Conrow, Morristown, N. J., Secretary of Pennsylvania Veterinary Society.

DEAR DOCTOR:—I have just received a copy of resolutions regarding a vet- nary school to be established at Washington, D. C., by members of Bureau of imal Industry. I have written for a prospectus which I hope to obtain soon.

The affair is one of deep interest. The vital points to me are: Not whether et of men shall establish a two, three, four or five year school, but whether blic business can or will be successfully and honestly prosecuted by men who e private interests in the same line at stake; also whether it is fair to other vate colleges for the Government to permit men in its employ to use its ronage for their private school in even an implied way.

We will not question the motives of the founders other than to admit that y wish to increase their income by transacting private business. This is e by a large number of Government employees without a question being ed as to its legality or propriety; we can but admit that, aside from the ool term graduation clause, that the prominence of the men proposing the ool borrows some of its force from the position they hold. There is another per objection; after a year, after two years, and as the years go by, such a ool will have an alumni of two year men. These men will compete with luates of three year colleges for positions at the disposal of the Department griculture and the Bureau of Animal Industry; now it is but natural that nbers of the Bureau having come into contact with the students of their col- would desire to place them advantageously. This would not necessarily rfere with the relative quota furnished by different States, but if taken advantage of would interfere with the rights of other graduates from other colleges equally good if not better.

It may be claimed that their men knowing the wants of the Bureau could train their men better for special work. I should say that this would be further infringement of private rights, it would also tend to narrowness of views in graduates of the proposed college and a deterioration of the profession. That the professors of a veterinary school, not a government school, should have such an immense patronage derived from the Government as officers of the most powerful Bureau of the Agricultural Department is of itself an inducement to students to attend. Add to this a short course when other schools are preparing to raise their standard, and there is attained the combination of short time graduation with the strongest possibility of an appointment in government service accompanying the diploma.

The mere fact that such things might be is, in my opinion, to effect : that not only should the men designing such a step look very carefully into its results and the appearance it may present to those of the profession on the outside, but the Secretary of Agriculture also should investigate the apparently harmless move which gains strength from the fact that men of high standing in the Bureau are its promulgators inevitably linking the fair name of the Department with their destinies whether the business be conducted fairly or not.

That the veterinary profession should take every interest in either promoting the enterprise as an additional educational institution for the welfare of the profession, or in opposing it as being founded against the best interests of the people and the profession follows without saying.

It must be remembered, sir, that I write this without reference to the integrity of any of the promoters of the scheme proposed, for among the Bureau are men whom I esteem my best of friends. It is simply as an institution that I write of it, judging that its originators merely misjudged the effect that the creation of a new veterinary school under their auspices would produce upon the public.

Is there not something behind all this which is suggestive ? Unless we wish to ascribe the motives of the proposed faculty as benevolent we must believe them mercenary. It is true that many government employees living in Washington feel the stress of the normal living expenses upon their salaries, and to prepare for the rainy day embark into one or another enterprise to add to their income.

It is also true that members of the Bureau are paid comparatively low as compared with other departments of service, and as compared with professiona men of equal attainments in other walks of civil life. It is, moreover, true that various colleges of Washington draw upon the various branches of the government for many of their professors.

Have not the promoters of this enterprise plenty of precedence for their action, and an added stimulus in the fact of insufficient salaries ?

Is not the remedy for the Department of Agriculture in employing its men to pay them amply for professional services, and exact of them that they shal expend their strength and energies in the work, and above all not engage in enterprises which may involve the good name and the patronage of the Department.

Further, is not the desirability of a government school of an advanced type ıggested in this movement? A school for graduates of other colleges; a school 'amed by professors separate from the employees of the Bureau, but which ay use the employees at stated intervals in clinical work; and take advantage the exceptional facilities for advanced work to be found at Washington.

While sympathizing with your Society in the belief that our profession is jured by the establishment at this time of a two-year college, you will know om the above why I do not endorse your resolutions except in the last proposion that it seems "contrary to the institution of the government to make use one of its bureaus to establish and maintain a private school."

It seems to me that the reasons of protest should have been brought out ore fully in this line as the Secretary of Agriculture should care very little ıether the school be a one or a four-year school, but whether he had any right interfere with private persons (as the members of the Bureau are outside of ice) setting up any business they pleased.

If the movement against it is to meet with any success it must be on the a that the school, because of its officers being in the pay of the government, plicates and involves the government in some way. If this can be established, ., if it can be shown that a private enterprise gains prestige and patronage m the government with the consent of those interested only, you will soon see head of the Department involved set the necessary machinery in motion to tify the evil complained of. Believe me, sir,

Very truly yours,

COOPER CURTICE.

MORAVIA, New York.

NATIONAL AND INTERNATIONAL MEAT INSPECTION.

BY DR. W. L. WILLIAMS, Chairman of the Committee on Diseases.

(A Paper read before the United States Veterinary Medical Association.)

Sanitary Science, in its entirety, is one of the broadest, blest and most ancient of all sciences. From the earliest s much of the noblest thought, the deepest study, the st sympathetic and earnest endeavors have been designed ıer directly or indirectly to guard or improve the health man.

The engineer who effectually drains a malaria-breeding ımp, the architect who constructs a house with due regard ight and air, and free from disease-breeding drains or refuse eptacles, the trained agriculturalist or horticulturalist who ects and destroys unhealthy vegetable food, the veterina- ı who controls or extirpates disease of animals, which, by contact or through the use of the meat or milk, are fraught with danger to the health or life of man, the physician who applies scientific measures to control or extirpate disease in man, and the great masses in close connection with these and many other human labors, all work upon a common ground, for a common purpose—human health and life—striving to vouchsafe to man his biblical three-score and ten years with a healthful body and mind.

It is sometimes asserted that this or that profession is the most important of all, but each is vital, and it is as difficult to measure or compare their value as it is to fix a price on human health or life.

Our ever changing social, political and geographical environments lead us to view with equally inconstant eyes the role of each of the useful sciences in relation to mankind. The one which proves most attractive, under certain conditions, commands generally the greatest number of and most zealous workers, while equally vital subjects are progressing but slowly or lying wholly dormant, until the favored branches have been enthusiastically advanced to a point far beyond that attained by the other corelative sciences, until the harmony of the whole is destroyed and the aims of the more advanced sciences are hampered or their progress impeded by the tardiness or deficiency of such branches as may from one cause or another have been suffered to fall far behind. At such times it becomes necessary to find sufficient, earnest and competent workers to revive and advance the lagging member and bring it into line with other useful sciences.

During the whole period of human history probably no other vital science has been allowed to drop so far behind its associates nor suffer so seriously from a long and baneful dormancy as the inspection and control of the flesh and milk of animals intended for human food, until at last the urgent necessity of the situation has forced itself upon the attention of the civilized world, and the demand has gone forth for zealous and efficient workers in the much neglected field, in so effective a manner that already much worthy and highly honorable labor is being done by a rapidly increasing band of earnest investigators, until we now have abundant promise that meat and milk inspection will soon occupy a highly honorable place in the front rank of the sciences holding a vital relation to human life, health and happiness.

Meat inspection is almost as old as human history and has een fundamentally influenced by religious, social, political nd commercial usages. The early Jews enacted meat inspecion laws upon an unusually high sanitary plane and enforced hem under the sanction of religion and with all the rigidity nd zeal of a sacred religious rite. The Jewish meat inspecion ordinances apparently rest upon the Mosaic law, and now, enturies after the tables of stone have vanished from the ight of man, these meat inspection laws still seem as indelibly tamped on the mind of the orthodox Jew as they were durng the days of Moses, and the civilized world looks with everence upon the ancient customs, and heartily wishes that ssentially the same laws could be adopted universally and dministered as faithfully and effectually as they were thirty enturies ago.

The necessity for meat inspection is so apparent and well nown to intelligent people that your committee scarcely feel arranted in dwelling, even briefly, upon this phase of the uestion. Recent study in connection with the so-called congious and infectious diseases have demonstrated apparently eyond all chance of doubt that they are each due solely to ecial living organisms. The contagious diseases of man nd animals are, in many cases, identical and intercommuniable, either by contact or by ingestion of parts of the deceased ody by the healthy animal, and it is now a well recognized ct, unqualifiedly endorsed by all who are versed in either uman or veterinary medicine, that the ingestion of deceased eat and milk is the direct cause of much disease and death the human family. The practically universal use of meat and ilk as human food in all civilized countries renders the queson of their freedom from disease of pressing import to the ealth of the nation.

Meat inspection possesses great importance also in relaon to national economy, as it affords the best and most available means for the prompt detection of the existence of contagious diseases among animals, indicates the location and extent of the infected area, and enables the government to institute elaborate study into their nature and causes, and the influence of climate, soil and other environments upon them, and to promptly apply remedies for their control or eradication.

In our opinion meat and milk inspection should be carried out primarily in the interests of the intended consumers of the food products, and not, as is too often the case, in the interest of the producer.

It should constantly be remembered, however, that the unwarranted condemnation of unhealthful animal food, or that which could economically be rendered sanitary, is a waste of food resources which no nation should tolerate, since by this waste the price of meat is advanced proportionately, and thus rendered less and less available as a food to those who stand in greatest need of it—the poorer laboring classes.

The early Jewish meat inspection was carried out with especial reference to Jewish consumers, and strictly forbade the use of the flesh of diseased animals as food for their own nation, although it would appear from the Mosaic law that such diseased flesh could be sold to other nations, if they desired to buy. Their meat inspection partook of the character of a religious rite, founded, doubtless, on sanitary reasons well known to the Jewish priests. The religious phase of this inspection was probably highly essential to effectiveness, since religious reverence and awe constitute the main source of power in ecclesiastical governments. If an animal was condemned on account of tuberculosis, the greed of the owner could in no way be so effectually controlled and silenced as by the invocation of ecclesiastical law. At the same time, under the tribal relations of the Jews, he could probably evade the use of a part of the deceased animal for his own food, only with difficulty.

Among the great mass of the human family, where religious sentiment fails to enter into the question of human food, the consumer has slaughtered and inspected the animals intended for use as food in his own family, or has relied upon the sterling honesty of his butcher.

Recent social, political and commercial changes have seemed to separate farther and farther the consumer of meat from the producer, and a knowledge of its fitness for food becomes more and more difficult to obtain, until under our present environments the meat we obtain at a butcher's stall might appropriately be termed a mystery. An Eastern capitalist, who is in no wise learned in regard to the diseases of cattle, owns a ranch some 3,000 miles distant in a Western Territory, which he visits at intervals of several years, and eaves the sale of cattle to irresponsible men, who neither know nor care whether they be healthy or not, and from his hands they are shipped 3,000 miles to a great slaughter house, where the cattle are bought for the express purpose of slaughering to sell again, and thence the meat is sold to a wholesale meat dealer in some distant city, or, perhaps, several thousand miles away in some foreign country, then again resold to a etail butcher, who finally disposes of it to the consumer. Until within the past few months this process has taken place in this country under the solitary eye of the interested seller, olely from a mercenary standpoint, and leaving the consumer in the most absolute ignorance possible as to the source and anitary condition of his meat supply. The meat consumers ad thus reached the climax of ignorance as to their meat upply, and had attained the pinnacle of danger to which a eople can be subjected through the use of diseased meat.

Other countries, have, in some cases, quite old established meat and milk inspection laws, and under the goadings of ational enthusiasm and love of country, it has been reported hat certain of the most highly civilized European nations ave ample inspection laws which are effectively administered y a thoroughly trained and organized corps of inspectors.

In the matter of government meat inspection, Germany aims, and perhaps justly, priority in point of effectiveness, ut if we are to judge the work by its fruits in the prevenon of the transmission of diseases from animals to man, or y the evidence adduced by the highest German authorities themselves, they yet fall far short of an ample law effectively administered. If this can be said of Germany, still more may be asserted of other nations.

The prime obstacle to effective meat and milk inspection has ever been and will continue to be the irrepressible and unavoidable conflict between the mercenary interests of the seller and the sanitary interests of the consumer, and upon a scientific and practical adjustment of these interests must meat inspection rest if it is to succeed.

In essentially all respects the interests of the producer and consumer are identical under a judicious meat inspection, and it is rather due to unscientific and irrational laws and actions that these interests are usually brought into violent conflict. Nutritious meat which is wholesome, or which can be readily rendered healthful, is as much, nay more, of a loss to the poor laborer than to the wealthy stock breeder or meat dealer, for while each carcass excluded from the market serves to increase the profits on those remaining to the seller, they inversely render the procuring of a suitable quantity and quality of meat more difficult for the poor.

Bollinger has well observed, "Were statistics available as to how many persons have died from insufficient nutrition, especially from the want of sufficient nutritive meat, we would find a much larger percentage than from the use of the flesh of diseased animals for food." We are thus reminded by this very eminent authority that we should, for humane and national economic reasons, be exceedingly careful to not exclude meats which are or can readily be rendered highly suitable for human food.

We have already stated that meat inspection should be made primarily in the interests of the proposed consumers of such meats.

When a Jewish rabbi, either personally or through a duly authorized party, inspected the meat for a particular tribe or clan, and carefully guarded the interests from a sanitary standpoint of his own tribe and kinsfolks, his work was c-complished, and the matter concerned only the immediate tribe.

Civilization, with its centralization or power, and breaking up of small tribes or clans and the organization in their stead of vast kingdoms, empires and republics with the great commercial changes, has rendered the ancient Jewish laws in some of its phases inapplicable to our present needs. In our country, with our meat producing animals reared at one point, killed at a distant slaughtering center, and then distributed to every part of the union, the nation becomes the consumer of meat, and so national meat inspection becomes a necessity. The people of the United States cannot consume the entire meat product of the nation, but have a vast surplus which it s desirable should be sold into foreign countries where, from the density of population or other unfavorable environments, there cannot be sufficient meat produced to supply the necessities of its people. In such event, if we would conform to the proposition that meat inspection should be primarily in the interests of the consumer, it is evident that, if we are to enjoy a large meat export trade, that the inspection of such food products must be so conducted as to properly guard the health and lives of those by whom the meat is to be used.

To this end opportunity must be given to the importing countries to know that the inspection is skillfully and conscientiously performed.

It is possible that other than sanitary reasons may lead a State or nation to exclude from its markets the food products of another. We recently witnessed the ineffectual attempts of certain States to exclude dressed meats imported from others by laws apparently inspired by the desire of the affected States to protect their cattle-raisers, and the assertion of Bollinger that to his mind more persons die from the want of a due amount of meat than from the eating of diseased meat would indicate that some of the great meat importing countries of Europe base their exclusion of foreign meats upon political rather than sanitary causes.

Your committee, appointed largely for the purpose of continuing the study and discussion of Dr. Schwartzkopff's paper on "National and International Meat Inspection," read before this Association at its last meeting, find it impracticable to review every part of his production at length. We will pass over his remarks as to how meat inspection should be carried out, merely stating that we are in full accord with the author and believe with him that meat inspection should be only undertaken under just and sufficient laws, in conveniently arranged public abbotoirs, and by qualified veterinarians fully competent to measure the significance of pathological lesions with which in the course of their duties they will meet, and that the inspection should be carried out by such persons and in a manner to properly guard the health and command the confidence of the intended consumers.

It has been quite a common custom in many countries requiring meat inspection to confide that trust to some political hanger-on whose qualification rests solely upon political services rendered or promised in the future. It is evident, however, to any intelligent person that this duty should be performed by a person well versed in pathology, for, as Bollinger has well observed, "meat inspection in its highest sense is applied pathological anatomy."

The recently enacted United States meat inspection laws appear to be, in most respects, adequate and beneficent, and although it is as yet too early to speak of their execution it is safe to predict that with experience and organization our meat inspection service will prove eminently satisfactory so far as our laws extend.

The law apparently has some imperfections which might be remedied with benefit. The provision in Section 7 of this act, which allows "farmers" a peculiar exemption from the general provisions of the inspection regulations and permits him to slaughter diseased animals and transport the meat into other States and sell it for human food apparently nullifies, to a very dangerous extent the beneficent provisions elsewhere found in the act and offers inducements to the favored farmer to retain his diseased animals on his farm until slaughtered and the more apparent evidences of disease are annihilated before offering it for sale.

The failure, perhaps incompetency, of this law to provide for the destruction of diseased meats and barely excluding them from foreign or inter-State commerce tends strongly to vitiate and deteriorate the inter-State or local meat supply. In effect the United States Meat Inspection Law throws back upon the State any animal which may be unfit for human food, and unless the State maintains rigid meat inspection laws (and most of them do not) this provision renders our local meat supply worse instead of better and benefits only the foreign or extra-State consumer.

The Mosaic laws interdicted the use of diseased meats by the Jews themselves, but permitted them to sell it to aliens while our national meat inspection law reverses this order and forces diseased meats upon the local markets.

These provisions will doubtless lead to the enactment of other laws adapted to relieve local meat consumers from this danger.

The mode of inspection is a question upon which most sanitarians readily agree. There are certain diseases of animals which admittedly render their meat unfit for human food and which being readily recognizable during the life of the animal warrants the inspector in condemning and killing the animal and destroying the carcass. Other animals require a post-mortem examination in order to verify a diagnosis or to discover diseases not discernible during life.

The principal question, the vital one in meat inspection, is what meat shall be excluded from use as human food? The ecent meat inspection law of the United States merely excludes he meat of diseased animals without enumeration or classifiation, and without dictating what use shall be made of the ffected animals or their meat or food products.

Dr. Schwartzkoff, in his previously mentioned paper read efore this Association, attempted a classification which to he mind of your chairman seems quite arbitrary, impracticble and open to considerable criticism.

He divides the whole category of disease animals into hree classes:

(1) Diseases in which animals should be condemned, killed nd the carcasses effectually destroyed, viz.: Anthrax, rabies, epticaemia, cattle-plague, glanders, small-pox in sheep, swine-lague, and hog-cholera and unborn animals.

(2) Diseases in which slaughter may be permitted to ascertain whether the whole or a part of the meat is fit for human food or to be used for industrial purposes, or to be destroyed, viz.: Food and mouth diseases, tuberculosis, actinomycosis, bovis, icterus, milk fever in cows, hydrothorax and ascites, all diseases which are combined with high fever, general emaciation and debility; for instance, pneumonia, enteritis, uteritis, etc.; and over-heated and too young animals, which should be kept for further examination.

(3) Diseases only ascertainable after slaughter, and in most cases by the use of the microscope. Under this head he enumerates the entozoa, known to affect meat producing animals and one bacteriological disease—actinomycosis suis. How the essayist managed to draw his lines in such a manner is not understood by your chairman.

It is not clear to us why, under his first class—diseases in which animals should be condemned, killed and the carcasses effectually destroyed—he should place glanders, which in many cases cannot be diagnozed except post-mortem, nor hog-cholera, which in its chronic stage may in some cases closely stimulate trichinosis, nor can we discover his authority for denominating an unborn animal " diseased " and condemning it to death and destruction.

Again in his second class he would permit the slaughter of animals affected with tuberculosis, a disease admittedly transmissible to man and might allow its meat to be sold food, while under his first class he would exclude swine-plague and hog-cholera, which are certainly not transmissible. Again he places septicæmia in his first class and destroys the carcass, while uteritis—which is septicæmia beginning in the uterus—he would place in the second class and perhaps allow it to be used as human food. He would kill a cow with milk fever in order to ascertain the suitability of the carcass for human food, when we cannot see what new guide for action would be revealed post-mortem. Under his third class, without stating or suggesting the line of action to be followed as to the use of the meat, he places actinomycosis suis, while all other bacteriological diseases, even actinomycosis bovis are placed in the other two classes.

It seems to your chairman that veterinary science is at present sufficiently developed to admit of and to demand a scientific classification of diseased or unhealthy meats, which without enumerating all diseases of animals would serve as a guide in the inspection of meat.

We would not attempt a classification upon the basis of the time at which the disease could be detected and determined upon, but would say that all animals intended for slaughter should first be inspected alive, and if there is sufficient evidence of disease to plainly warrant condemnation, he inspection evidently need go no farther, while in case uch evidence is wanting, then permit slaughter and complete he inspection by the necessary post-mortem examination. We would attempt a classification based upon the source or ather the kind of danger which the diseased meat bears for man.

By such a scheme we would have four classes:

(*a*) Parasites of meat capable of partial or complete development in the human body.

(*b*) Diseases due to micro-organisms or in the course of which micro-organisms develop, which do not find suitable media for growth in the human body, and which, therefore, an only act injuriously upon the human body through their xcretions or productions of some chemical poison due to heir presence.

(*c*) Diseases produced by micro-organisms capable of multiplication and growth within the human body, and which also roduce chemical poisons which, when consumed, may produce toxic effects.

(*d*) Bacteriological diseases transmissible to man in which ere is no danger from the ingested bacteriological products, but entirely from the micro-organisms themselves.

We need not enumerate the individual classes under this ethod of arrangement.

Under class A we have a long list of parasitic diseases, hich in meats offered for sale are mostly found in a natural ate, or matured to the highest point possible in the host, *e.g.*, cysted trichinæ, larval forms of tænia, etc., and rarely affect the general condition of the body of the host, and can only injuriously affect the consumer by the ingestion of the living parasite. In such cases, thorough cooking of the meat under official control renders it safe, and only objectionable from a sentimental standpoint.

More rarely it happens that some of these parasites, by invading vital organs, may cause a general derangement of the system, which, by producing grave pathological conditions, fever, emaciation, anasæca, etc., as is seen in larval forms of tape worm in the brain, in strongyli of the lungs and bronchi in cattle and sheep, strongyli of the arteries in the horse, distoma hepaticum of cattle, or by wholesale migration to every part of the body, as in the first stages of trichinosis.

In all such cases the entire carcass, and in those where the parasites, although in a passive state, are yet so abundant as to be abhorrent, all infested parts of the carcasses of the affected animals should be not only condemned and rendered inocuous under official supervision, since the condemnation of some kinds of parasitic meat, and allowing it to be consumed raw by dogs or other lower animals, renders the extermination of such diseases impossible, and not infrequently gives the parasite opportunity to undergo one more stage of development and return to man in a far more dangerous form than that found in the condemned meat.

Consequently, provision should be made for the complete destruction of these animal parasites before the condemned meat passes from official control.

Under class B we place the flesh of animals diseased fro a malady not transmissible to man, but which may contai chemical substances, ptomaines or other organic substance which, when ingested, may produce serious constitutional disturbances. Included in this class we find a large number o sporadic affections accompanied by variations in temperature nutrition, etc., of a more or less grave character, as in ordinary pneumonitis, pleuritis, enteritis, etc. It includes also long list of contagious diseases of animals, among which w find the most destructive epizootics, exerting in most case great influence on our national economy. Among these ar contagious pleuro-pneumonia, hog-cholera and closely allied diseases, Texas fever and many similar affections. We believe it to be generally conceded that in all this class the flesh of such animals is only rendered dangerous as human food when the disease-processes have attained such a stage as to produce a decided variation of the body temperature, marked emaciation, or other grave pathological conditions, in which cases the meat should be absolutely condemned as human food and only permitted to be used for industrial purposes after the carcass has been rendered inocuous (in case of contagious disease) to other lower animals.

Class C might with profit be divided into rather indistinct sub-classes;

1st. A group of what we might term "sporadic" infectious diseases, such as pneumonia, pyo-thorax, pyæmia, septicæmia, enteritis, septic enteritis, pyo-septhaemia or omphalo-phlebitis of new-born animals, recent infected wounds, etc.

This includes one of the most important classes of diseased meats in the entire category, although from their nature they are of comparatively little concern to our subject proper—national and international meat and food inspection—because they are ordinarily slaughtered for local use. Bollinger has well observed that of all authenticated cases of death from the consumption of diseased meats that eighty per cent. were due o the use of flesh from "nothgeschlacteten thieren," or animals slaughtered when death from other causes was imminent, n order to avoid financial loss to the owner. These animals, laughtered under urgent necessity, belong almost, if not wholly, in this subdivision, or rather they constitute it.

In our second sub-class we include the epizootic contagious iseases of animals which are transmissible to man, and which lso produce within the animal body ptomaines or other hemical products of a dangerous toxic nature—rabies, anhrax, acute and constitutional glanders, tuberculosis and ctinomycosis. The entire carcass of animals coming within his class should evidently be destroyed completely, both for nitary and economic reasons.

Under class D we would place three closely allied affections which constitute the most stubbornly contested field in veterinary and medical sanitary science, having engaged the attention of sanitarians for years, and promising yet much controversy ere the questions are settled. Upon this class your committee has found it impossible to agree. This class includes, in our present state of knowledge, three diseases, or rather a form of three of the maladies enumerated under the second sub-class of class C. They are the chronic local, or perhaps more properly, latent form of glanders, tuberculosis and actinomycosis. They have many characters in common, so much so that we have been enabled only recently to differentiate them. Actinomycosis was long known in one form as glanders of cattle, in other forms as tubercular stomatitis and tubercular enlargement of glands, while in man actinomycosis was known as a variety of tubercular affection. All are peculiarly widely disseminated over the world, are in many cases exceedingly latent or passive, often discernible only by post-mortem inspection, may exist in certain individuals for an almost indefinite time without inducing noticeable constitutional disturbances, and all having a predilection for the lungs and lymphatic glands; again their admission to the animal economy may effect their extension largely through these. The micro-organisms are highly gregarious in their habits, and have a great tendency to become encysted in vari-sized cysts with fibrous or fibro-calcareous walls. This encystment renders the enclosed micro-organisms passive, or rather in many cases they retrograde and even perish, and thus in all cases, through this encysting process, a large portion of the bacilli, sometimes, so far as we can discern, all of them, become so encysted and render the affection wholly latent, and later these bacilli may largely or wholly perish and recovery of the animal follow, and in two, if not all three diseases, with immunity from future attacks.

All are transmissible to a wide variety of animals, and the micro-organisms thrive in vegetable media. In a healthy animal the digestive processes are usually fatal to the etiological moment.

The transmissibility of glanders to man, and the dangerous character of glanders-affected meat for human food is, we believe, universally conceded.

The contagious character of tuberculosis among the lower animals has been well attested in every possible respect. First, by clinical observation. Second, by experimental transmission. Third, by the production of immunity from subsequent exposure. Its identity in the various lower animals and in man rests upon as thoroughly tested a basis as is recognized in medicine- and the inter-transmissibility between man and animals has been equally well established. Space forbids that we should consider the question of the fitness of the meat of mildly affected tuberculous animals for human food beyond the general conclusions as to the entire class.

The third affection in this class, actinomycosis, constitutes at present the most stubbornly contested ground in the whole question of meat inspection from a sanitary standpoint, and it has been found impossible for your committee to agree. Consequently your chairman has felt compelled to present his personal views in the body of the report, and has asked Prof. Schwartzkopff to give as completely as possible the contrary phase

The fundamental point upon which rests the classification ierein proposed, is the question of the contagiousness of ac-inomycosis. What constitutes a contagious disease? Based ipon the derivation of the word and the knowledge of the lass of diseases to which it has been applied, it has been ield to signify a malady transmissible by contact or approach. Later developments in medical knowledge have gradually ed us to apply this word in a more restricted sense, excluding nternal and external animal parasites, and meaning more par-icularly those highly contagious affections due to the inva-ion of vegetable micro-organisms.

We would then say that in the present light of medical cience, when speaking of contagious diseases in a restricted ense, that we apply the term to those affections due to the in-asion by a micro-organism, of a more highly organized body, herein the invading organism finds all the conditions and nvironments essential to its growth and reproduction, and in which the newly generated organisms are capable of attaining the same degree of development and maturity as the initial invading entity, and hence becomes capable of transplantation to other analogous organisms. In other words, if glanders bacilli are introduced into the living tissues of a soliped not previously rendered immune, and they multiply and the new organisms attain the same development as that possessed by the bacilli constituting the initial inoculation, then these new bacilli must be equally capable of transplantation with the old, and hence under the present meaning of contagion glanders is contagious.

During the discussion of Prof. Schwartzkopff's paper on meat inspection he says: "As to the question of actinomycosis, as I said before, theoretically it is not contagious. . . . I do not believe it is contagious, and I base my opinion on my own experience as well as my theoretical studies in handling cattle in the Berlin slaughter-houses." The basis of Prof. Schwartzkopff's conclusions seems to your chairman somewhat vague.

We fail to comprehend how in ordinary routine work in a Berlin slaughter-house, a disease can be classified as contagious or non-contagious. He has not given us any data from his theoretical or practical knowledge of the disease which throws the least light or reason upon his conclusions.

Your chairman, in union with most veterinarians throughout the world, believes it is contagious, and predicate our belief upon the following facts, which will probably be admitted by Prof. Schwartzkopff: (Am. Vet. Rev. Vol. XIV, p. 495).

1st. Bacteriologists, so far as we can learn, universally agree that the micro-organisms found in actinomycosis at lungs, lymphatics, liver, bowels, muscles, etc., of lower animals and man are all identical with the reproduction of the actinomyces found upon various forms of vegetable food, that in these groups of actinomyces in the affected animal body are to be found micro-organisms identical in morphology, maturity, vitality and reproductive power with the actinomyces found on plants.

2d. It is universally agreed that actinomycosis is due t the invasion of and multiplication in the animal body of these actinomyces or ray fungi. Under the definition we have proposed for *contagion*, these two factors render this disease contagious.

3d. It it generally, if not universally, admitted that actinomycosis originates in animals through the lodgment and multiplication of actinomyces in wounds or abrasions of the skin or mucous membranes, probably in some cases by the inhalation and lodgment of the fungi in the air cells. This act rests upon abundant and authentic clinical records.

Observations of the disease in man, where the history is raceable, makes it evident in every case that the disease was due to infection through external wounds. Dr. Bodamer relates a case in a miner where the infection was evidently due to the introduction of actinomyces into a wound. Dr. Schiemer records a case in man referable to wound infection, and also Ponfick.

Other recorded cases in man are strongly suggestive of noculation during mastication of actinomyces-containing food, by means of abrasions of the gums and about the teeth. Compare cases recorded by Dr. Murphy, N. Y. Medical ournal, 1885, p. 17; Dr. Ochoner, Journal American Medial Association, 1886, p. 608; Israel, in Virchow's Archives, Vol. LXXIV; Ponfick, De Aktinomykose des Menschen, Berlin, 1882; Rosenback, Centralblatt fur Chimyie, 1880.

Were the history of inception of actinomycosis of the nternal organs of man available, they, too, would doubtless xhibit distinct evidence of inoculation through a wounded, braded or extremely delicate membrane, after ingestion or nhalation of actinomyces.

Clinical observations of veterinarians in connection with he origin of actinomycosis in animals indicate clearly and eyond contradiction that the disease is due to the translantation of the ray fungus from some other organism to a ounded, abraded or extremely delicate surface.

Once the micro-organisms have invaded a wound and have ound suitable ground for their growth and multiplication, it s admitted by all scientists that new crops, without known limit as to number, generate, mature and perish, while the disease spreads and augments, or sometimes declines in varying degrees.

These propositions are admitted, so far as is known to your chairman, by all scientists, whether they believe the disease contagious or non-contagious.

3. Experimentation, the crucial test as to the transmissibility of a disease, fully bears out the above facts. Johne (1) transmitted the disease by inocculation in 75 per cent. of trials with fresh material from a diseased animal.

Ponfick (2) likewise suceeeded readily in transmitting the disease in cattle by intra-venous and subcutaneous injections, but failed to transmit it by feeding the fungus to cattle, and had negatiye results in inoculations in dogs and rabbits. Bodamer (3) records six successful inoculations out of thirteen trials with dogs, cats and rabbits—animals apparently only slightly susceptible.

Israel (4) and Kolter succeeded in inoculating rabbits with actinomyces from man, while Cruikshank (5) had a similar result from inoculating cattle with the fungus from an affected man.

Clinical observations lend strong support to the theory of the transmissibility of the disease from animal to animal. Casewell (6) reports an extensive outbreak of actinomycosis in cattle and hogs bearing strong evidence of indirect transmission from animal to animal by means of food soiled with discharges from actinomycotic abscesses of an affected animal. Your chairman has observed similar instances where 50 to 75 per cent. of a cattle herd was found affected, apparently due in a great measure to transmission in this way from animal to animal. In company with Casewell and other other veterinarians (1) we saw an extensive outbreak in the distillery cattle sheds of Peoria, Ill., in 1889, where inter-transmission apparently played a very important role. The extension of the disease seemed due to the fact that badly affected animals were kept in the sheds with the healthy. Large abscesses about the throat and jaws, being irritated and abraded by contact with high mangers, discharged large quantities of actinomyces-containing pus, into the troughs, along which flowed the slops to neighboring cattle, and the inoculation of the healthy cattle was favored by their being supplied with very coarse, hard, wild hay, which evidently served to abrade the mouth and pharynx.

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(1) Johne, Actinomykosis Bericht ueber d. Veterinarwesen in Konigreich Saschen, 1881.

(2) Ponfick, Die Aktinomykosis der Mensshen, eine neue Infectious-krankheit, Berlin, 1862.

(3) Jour. Comp. Med. and Surgery, Vol. X, p. 120.

(4) Centralblatt f. Bacteriologie n. Parasitenkunde, B. LII, No. 14, 1888.

(5) An. Rep. Ag'l Dep., England, 1885.

(6) An. Rep. State Bd. Live St'k Com., Illinois, 1890.

A long list of the leading scientists of the day might be quoted who believe in the contagiousness of actinomycosis, uch as Bollinger, Ponfick, Johne, Friedberger, Frohner, srael, Rosenbach, Dixzozen, Lendquist, Neller, Peroncito, Ochsner, Cruikshank, Fleming, Liautard, Law and others, almost without number. In fact, it seems, in so far as your chairman has been able to learn, that contributors alike to tandard and current veterinary literature of a recent date re all agreed that the affection is contagious. We undertand that Prof. Schwartzkopff and other dissenters have iven voice to their theories and deductions through the colmns of the agricultural or live-stock press and avoided lacing their views in form or place where it would come within proper range of scientific criticism- We trust that ow, for once, Prof. Schwartzkopff and his colleagues will resent their non-contagious theory of actinomycosis before his convention, from a scientific standpoint, aad permit their rguments to be weighed upon a strictly scientific as well as ractical basis. We desire that Prof. Schwartzkopff should ully explain his statement at our last meeting that he prediated his belief of the non-contagiousness of actinomycosis on is theoretical studies and his practical work in the great battoirs of Berlin. What great veterinarians of Berlin taught ur fellow-committeeman that actinomycosis was non-contagious, while such Germans as Johne, Ponfick, Rosenback, Friedberger, and such veterinarians of the great Berlin Thierarztlichen Nozkschule as Frohner, unitedly, and without fear or apology, denominate the disease as infectious? What facts has he learned in the slaughter-houses of Berlin that demonstrate the non-transmissibility of the disease?

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(1) Special Rep. State Bd. Live St'k Com., Illinois (Actinomycosis in Cat-), 1890.

Granting the transmissibility of actinomycosis, and thus supporting the above classification, we are prepared to consider the three members of the group jointly in their relation to meat and food inspection. The use of the flesh of solipeds has not gained sufficient popular sanction in this country to warrant us in consuming your time by referring to glanders.

Admitting the identity of human tuberculosis and actinomycosis with these two diseases in lower animals, and the proof of their transmissibility, the question which confronts us is, what, if any, parts of affected animals are safe for human food, or can be readily made inocuous?

Upon this question there is a great variation of opinion, rendering any definite conclusions which would be acceptable to all extremely difficult, if not impossible.

We have taken the stand that in these chronic or passive forms of disease the sole danger to the consumer of the meat or milk of affected animals exists in the living, virile micro-organisms, so we are at once brought to inquire in what parts of the animal body do the germs exist, and in what parts are they absent.

Many contend that only those parts which are evidently affected should be condemned and destroyed. This is apparently the idea of Dr. Schwartzkopff in relation to tuberculosis in his remarks on his paper of last year, but a careful study of his utterances leaves one in doubt as to his real belief.

The warrant for the custom of condemning and destroying parts evidently affected with one of these maladies and allowing the remainder of the carcass to be used for human food must rest upon one of two propositions: 1st. That the micro-organisms exist only in those parts where their existence is plainly evidenced by the agglomerations; or, 2d. Upon the theory that meat from diseased animals must be considered inocuous until the presence of the infecting element in the part in question has been fully demonstrated.

It must be admitted with regard to the first proposition hat these germs may exist in agglomerations in parts of the nimal not usually seen by the inspector, e. g. meningeal tuerculosis. There is, further, very good evidence that the erms of these maladies are transmitted from part to part long the natural course in the lymphatics. This is very icely shown clinically in actinomycosis in man and cattle. n the latter the origin of actinomycotic abscesses in the lymhatic glands in the region of the throat can frequently be learly traced post-mortem to an initial inoculation in the harynx which has nearly left sufficient trace of invasion to emonstrate the role which this part has played as the point f inception of a disease which is to find a suitable field for evelopment only after the etiological moment has traversed r a comparatively great distance through the channel of a mall vessel. We observe this lymphatic transmission most eautifully in antinomycosis of cattle, beginning at or near one f the feet and slowly but steadily moving along the course f the lymphatic vessels, destroying by suppuration the glands ; ome of the germs even succeed in passing these sentries ere eir destruction prevents further progress, continuing their avages toward the central portions of the body. Evidently the ctinomyces are usually some distance in advance of microcopical pathological changes, and we cannot judge to what xtent a part is invaded except by an utterly impracticable d laborious microscopical examination with but little warnt of reliability.

The migration of tubercle baccilli and actinomyces through e blood vessels seems to be proven beyond reasonable doubt.

It is true that with but a few years' study of these disses we have recorded but few evident cases of such transission ; but we feel that they quite suffice to overcome negave testimony, although possibly far more voluminous.

Friedberger and Frohner (1) say that it seems possible that tinomycosis can be disseminated by means of the blood, while in case of tuberculosis (1) they assert that it may and does extend in diverse ways:

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(1) Pathol. u. Therape d. Hausthiere, Bd. II, S. 545.

(1) By the lymph channels. (2) By continuity or contiguity. (3) By the blood circulation.

This blood infection and extension happens by the rupture into blood vessels of tubercular nodules or tubercular affection of the vessel walls. It is well shown when the bacilli are excreted in the milch, from an apparently healthy udder. Hamburger (2) cites a case of actinomycosis in a colt one and one-half years old contracted presumably during decubitus through wounds produced by splints applied to correct rachitic deformity of the legs, in which in bones and cartilage and finally in the arteries themselves, was found actinomyces.

We are forced to conclude, therefore, that once an animal is affected in a local or passive form with one of this group that we have no reliable means at our command for determining that apparently healthy parts are in reality sound.

We believe further that it is the duty of the meat inspector rather to be able to say if meat is *fit* for use as food than *unfit*. Where question is raised as to the fitness of given food we hold that the consumer should be granted the benefit of the doubt, and that the inspector should be able to say unreservedly that the meat is wholesome before he permits it, upon his sanction, to be sold for human food.

The recently enacted U. S. meat inspection laws are as precise, with all their brevity, as can well be devised. It makes simply and only two classes of meats—those from well and diseased animals. The former is passed as wholesome, the latter rejected.

This is the true, safe line, and affords between the flesh of animals dead from disease (which all civilized people abhor as food) and that of healthy animals a neutral ground, which should act as an effective barrier to the use of this repulsive and dangerous food, which with our present laws is yet rendered possible in our local markets.

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(1) Ibid S. 505.

(2) Holl Seitchrift f. Thierheilkunde, etc., Bd. 16, Lf. 2 and 3.

The meat of animals slaughtered at a time when death from disease is imminent can not be considered preferable to those which have died from the ailment. What possible difference can it make from a sanitary standpoint if a cow with parturient apoplexy is slaughtered or allowed to die from the disease one-half hour later?

The neutral ground—disease—between health and death is one which the meat inspector should enter with caution, and so we do not hesitate to assert our belief, predicated upon the foregoing reasons, that the meat of diseased animals of this group should not under ordinary conditions be passed as wholesome food.

As we suggested at the outset, however, we are equally firm n our belief that from the standpoint of humanity and national economy we have no right to destroy wantonly and uselessly such an enormous food supply as the unqualified destruction of these meats would entail Since the whole danger in the consumption of these meats rests upon the presence, or possible presence, within the parts used as food, of living, ransplantable micro-organisms, it is evident that any process o which it can be subjected without destroying the nutritive value, and yet effectually and beyond all doubt destroy the micro-organisms will render the flesh *sound* from a strictly anitary standpoint. Consequently we would say that the pparently healthy parts of such diseased animals should be horoughly and effectively cooked (boiled) under official supervision and then passed as sound meat, while the evidently ffected parts should be destroyed.

Such a course evidently renders these meats equally safe o that of the healthiest animal or perhaps even more so, for we cannot at all times discern what insidious disease be lurk-ng unseen in an apparently healthy body.

We have refrained from dwelling on all the phases of the ubject of meat inspection as suggested in Dr. Schartzkopff's xcellent paper of a year ago because time would not permit, ut have confined our consideration mainly to those questions which seemed to us most in dispute and which would in our elief lead to the most spirited and profitable discussion.

LOCAL TUBERCULOUS ABSCESS IN A BULL.

By Wyatt Johnson, M.D., Montreal.

[Paper read before the United States Veterinary Medical Association.]

The importance which now attaches to the early recognition of tuberculosis in herds of valuable cattle, makes it of interest to record the following unusual case:

On March, 11th, 1890, I received from Dr. D. McEachran, of Montreal, a specimen of pus, with the statement that it came from a small abscess about the jaw of a valuable thoroughbred bull, and the owner of the animal feared that it might be suffering from tuberculosis.

The history of the stock did not give any evidence of tuberculosis having occurred among the other animals, though it had appeared about two years before on an adjoining farm, and the present subject had served a cow in this herd during the previous season.

The present animal, a fine, strong, healthy-looking bull, four years old, was always in perfect health till two months previous, when the attendant noticed a swelling beneath the jaw. This suppurated and was opened, but did not heal up. Recently another small abscess formed in the neck which also did not heal when opened. The attendant thought that the inflammation was caused by the chafing of a rope around the animal's neck in the stall.

The pus when received was grayish and oily looking, like freshly mixed paint, with faint streaks of red. It contained numerous, small, bright yellow particles the size of pin-heads and some small, gritty bodies of about the same size. Miscroscopically, it was composed of leucocytes, a few red blood-cells and also crystals. The yellow particles proved not to be actinomyces. Cover glass preparations (ten in number) were examined without detecting tubercular bacilli. Some of the covers were left as long as eighteen hours in the stain. No other bacteria appeared to be present.

I inoculated three rabbits in the anterior chamber and three guinea-pigs in the peritoneal cavity, using one or two drops of pus in each case. A guinea-pig and a rabbit were placed for control in the cages with the inoculated animals.

On March 15th I visited the farm in company with the owner and Prof. McEachran. The bull was found to be a fine, healthy-ooking, well-nourished animal. Beneath the jaw were two small suppurating abscess cavities on the left side, with red, firm granuating walls. Lymph glands in the neck not enlarged. Physical examination showed no evidence whatever of tuberculosis.

In spite of Dr. McEachran's recommendation to delay a few weeks till we learned the result of the inoculation, keeping the bull meanwhile under observation, and carefully isolating him, he owner insisted on his being slaughtered immediately, together with a yearling bull, the son of the one under consideration. Accordingly we had an opportunity of making an autopsy on both animals forthwith, but failed to detect any evidences of tubercuosis in either the internal organs or glands. The penis, testes and vasa deferentia were free from tubercles. The abscess cavities appeared to be purely subcutaneous in location and showed no vidences of tubercles or caseous masses in their vicinity. The bodies of the vertebræ were free from tubercles. As the meat was intended for sale the muscles and intermuscular planes were only examined as far as could be done while the carcass was being dressed.

My notes of the inoculations are as follows:

On March 16th, one of the rabbits shows pauophthalmitis. n the other two the necrosed wound is nearly healed, but slight laisticiritis persist.

March 18th. Examined sections made through the portions f the abscess wall hardening in alcohol. These showed a supercial necrotic zone surrounded by granulation tissue formed of mall, round cells. No giant cells. A large number of sections were examined for tubercle bacilli without finding any. (This xamination was again repeated on April 24th, still with a negave result. The absence of actinomyces was also confirmed.)

April 11th. One of the guinea-pigs had been wheezing for a week and losing flesh rapidly. Died to-day. Autopsy: Over parietal peritoneum a few pearly gray nodules. Omentum shows small, gray granulations with opaque centers. Spleen contains yellow white opaque nodules about the size of split peas. Microscopic examination of sections of the spleen shows a few tubercle bacilli in every field.

April 24th. All the animals killed to-day. The control animals found to be free from tuberculosis. The two remaining guinea-pigs present similar conditions to the one which died on April 11th, tubercle bacilli being found in the spleen in each case.

The three rabbits all showed extensive tuberculous inflammation in the regions of the iris. Tubercle bacilli were found in each case. Two of the rabbits showed caseous nodules in the lungs and spleen which contained numerous tubercle bacilli.

I have reported this case in detail because I have not been able to hear of a similar one when the disease was limited in this peculiar manner.

It is of interest, owing to the conclusive results of the inoculation experiments, when a most careful microscopical examination had failed to detect tubercle bacilli. The apparently purely local nature of the lesions is also interesting. It is seldom that an opportunity of examining a valuable animal post-mortem is insisted on by the owner in such an obscure case. From the appearance of the abscess wall it is probable that recovery would have been complete had the animal been allowed to live.

Unfortunately, the suspicions of the owner were well grounded, and he lost in the following year a valuable cow from tuberculosis. In this case a large fungating, ulcerating growth, as large as an egg, projected from the vocal cords, and Dr. J. B. Page, of Amherst, who examined the organs, was able to demonstrate masses of tubercle bacilli actually in pure culture in necrotic spots from the larynx and liver.

It would have been preferable had I also made inoculations with material from the abscesses taken at the time of the autopsy under aseptic precautions. The fact, however, that of the material sent me (six separate samples) each gave positive inoculaion results, seems to leave no doubt that the infection was in no vay due to extraneous contamination. It must be remembered hat at the time of the autopsy we came to the conclusion that he case was not one of tuberculosis, and, therefore, no further onfirmation was sought.

The fact that two separate cases of tuberculosis in unusual ocalities in this herd occurred within a year, seems to indicate ome unusual source of infection. None of the farm hands had uberculosis, as far as could be learned. Possibly the infection ay have been accomplished through the agency of some smaller nimals, rodents for instance, about the farm, in whom tubercu-sis would not be suspected.

The fact that no subsequent cases appeared in the herd this ear points to some transient source of infection of an unusual aracter.

REPORTS OF CASES.

“*Careful observation makes a skillful practitioner, but his skill dies with him. recording his observations he adds to the knowledge of his profession, and assists his facts in building up the solid edifice of pathological science.*”—VETERINARY CORD.

INVERSION OF RECTUM.

By HERBERT S. ADAMS, CLARKSVILLE, MD.

July last I was called to see a case which was new to me. tient a bay gelding four years old; upon examination proved be prolapsus ani; it was in two large lobes lying superior d inferior, allowing the feces to pass out between. The perior lobe was six inches in its smallest diameter and seven hes in its largest. The inferior lobe was nine inches in its gest diameter and seven in its smallest. History of the e as far as I could find out was as follows: The horse, a nt riding and driving horse, weighing 1,000 pounds, was iden the previous day and was put in a barnyard next morn-, after being at pasture during the night, perfectly well and s all right at noon. At 5 A.M. one of the men discovered trouble, and said that the horse was busted. The condition when I saw it an hour later was, the parts were very hard and circulation was partially strangled ; the animal was in great pain ; the lower surface of each lobe was dark with blood. Temperature 105 1-5 F., pulse full and 80 per minute Treatment : gave tinct. aconite rad. in fifteen-minute doses every three hours until pain abated ; gave injections of warm water after scarifying the lower part of each lobe, following up with injections of ice water every four hours and after each injection inserted a suppository of sulph. zinc ʒiss, vaseline ℥iii, and kept the protruding parts anointed with the same and for an antiseptic, carbolic acid, 1 to 30 of vaseline applied twice a day to part. The third day the superior lobe gradually decreased and by the eighth day the other lobe had disappeared.

During this time the horse was fed oats in sheaf with the straw cut off, all the water he wanted to drink ; gave nit potassa ʒiss, hyposulphite soda ʒii twice daily, following up with a tonic of nux. vomica pulv. ʒi twice a day in feed The patient regained his spirits a week after the treatmen and now does hard work under the saddle.

No cause can be given, for no other horse was with him.

EXTRACTS FROM GERMAN PERIODICALS.

By Richard Middleton, D.V.S., Philadelphia, Pa.

PHLEGMONOUS ERYSIPELAS IN BOVIDÆ.

Locet has seen this disease in his district occurring in the form described below, although previous to this case it had been unknown in the neighborhood. The symptoms were constitutional as well as local.

The skin covering the left masseter muscle was enlarged b an inflammatory swelling ; the membrane of the mouth hyperæmic, salivation present. The swelling encroached upon the intermaxillary space, and then to the right cheek. At this time th patient experienced anorexia and difficult respiration. Th œdema, which extended posteriorly to the sternum, was well de fined and circumscribed, being warm, soft and painful. Fluctuation detectable at the originating point of the malady, and by incision of this portion of the anatomy, a considerable quantity of a foul-smelling fluid escaped, which contained cogaulated particles. The collection reformed, but the dyspnœa seemed relieved by the operation. From the region of the cariniform cartilage, the disease process spread upon the breast, abdomen, flanks and udder. Contemporaneously with this, the rectal temperature registered 106° F., and the animal receded rapidly in flesh and condition until death ensued by asthenia.

The autopsy exposed infiltration of the subcutaneous connectve tissue, the same, when seen in localities recently usurped by he disease, contained a yellowish coagulum, but in old established enters of the affection, this clotted substance was of a dirty, rayish color and offensive to the smell.

The blood was not clotted; the liver friable and the spleen ypertrophied.

By a microscopical examination the cellular tissue appeared istended, and was occupied by a fibrous exudate containing ells. By double staining, it was possible to note the presence micrococci, which had arranged themselves in chains.

The cocci were tinted by the Gram, and by the Gram-Weigert ethods. On ordinary soils, in the presence of air, they flourish, arying in a temperature from 64° to 98° F.; they are therefore robic.

The intravenous, subcutaneous and intraperitoneal transplantions of the fresh cultures, when made in guinea pigs, were follwed by negative results.—*Locet, in Berl. Wochenschrift.*

LEUCÆMIA IN THE HORSE.

An eight-year-old horse, previously healthy, evinced sudn weakness and unsteadiness of gait, with a great disposition recline. Pulse regular, and numbering 68; respiration 30 and perficial; temperature 104° F. Mucous membranes tinted a lowish gray.

The day succeeding, physical symptoms more intense; on the third day the same still more pronounced, together with great debility, anæmia of visible membranes, and œdema along the median line, extending from the pectoral muscles to the prepuce. Patient succumbed on this date.

Upon post-mortem fifteen quarts of a reddish yellow fluid were obtained from the abdominal cavity. The liver enormously hypertrophied, occupied both the right and left hypochondrial and supra-sternal regions. Lymphatic glands along the colon and cæcum enlarged to equal one's fist in dimensions, in the folds of the messentery reddish-gray globular nodules in abundance. These glands were soft, and upon transverse section offered a grayish surface streaked with reddish lines.

At the apex of the cæcum a blueish red formation as large as a goose egg. Lining membranes of the stomach normal. Interior of the small intestine opaque and gray red; the same of the colon and cæcum exhibits hemorrhagic infiltration with several erosions the size of a nickel piece.

The liver weighed eighty-four pounds; was eight inches in thickness, and forty inches broad; reddish and friable. Upon section the same peculiar strips of coloring as observed in the lymph glands. In the hepatic parenchyma innumerable tumors no larger than a mustard kernel. Lobes of the organ obliterated and not distinguishable; several cavities within surrounded by dark-red walls. Spleen swollen and measuring twenty inches in length, sixteen in breadth, and two in thickness; gray-blue externally, and yielding, not to say mushy to the touch.

Malpighian corpuscles exceptionally large. Both kidneys hypertrophied and soft, with light yellow lines running from the papillæ to the cortex. Contents of the infundibulum and pelvis mixed with pus and mucous.

Bronchial and laryngeal lymphatic glands augmented. Veterinary literature shows no other similar case of leucæmic infiltration of the liver; the exceeding size of the latter induced the *intra vitam* dyspnœa.—*Ztsch. f. Vet. Kunde, IV*, 21.

UMBILICAL HERNIA OF THE STOMACH.

In a six-weeks-old sinsmenthaler calf a swelling was noticable in the vicinity of the umbilicus; this had been increasing in size for fourteen consecutive days. After permitting the formation to progress at a slower rate for six weeks longer, the owner sent for P. The health of the patient had by this time become the worse for non-attention; the hernial sac measured six inches in breadth and the same in length. Upon the most depending portion of the protrusion we could discern a few black and red spots surrounding an irregular rent of foramen through which food masses were escaping. The animal was slaughtered in order to preserve the flesh for eating purposes.

The autopsy revealed a perforation of the abomasum four nches in length; the lips of the same had become adhesive o the abdominal walls so that a natural fistula remained. Tuberculosis of the omentum and peritoneum also existed.

P. supposes the cause to have been a traumatic one; he dvances the theory that the fourth stomach had been pierced y a foreign body, and that pressure of the contents of this rgan upon underlying the abdominal walls caused bulging nd ultimate gangrene of the same.—*Badische Th. Mittheilungen.*

ALOPECIA IN DOMESTIC ANIMALS.

Nude horses have, in several instances, been exhibited as curiosity. As a disease alopecia is rather rarely met, and ccurs in four varieties. The first form, *alopecia congenita*, is xceptionally seen in our animals; the author has recorded a ase in which the dam was bereft of the total hirsute cover-g, which peculiarity was transmitted to the offspring.

Hering communicates that in 1864 at a meeting of natu-lists in Italy, there was presented a hairless calf, coming om healthy and even heavily-coated parents. A later inves-gation of the dermis showed the presence of small hair-ulbs, papilli and sebaceous glands immaturely developed; ther offspring of the same parents were anatomically perfect. osenkranz and Nill each report two cases in bovidæ.

Alopecia areata is characterized by its occurrence in single, isolated patches upon the apparently healthy skin. This extends by enlarging its periphery, gradually increasing its circumference until it embraces the whole region in complete baldness. The latter remains permanently, as a rule, but may at some future time give place to a growth of finer texture than the original. The aetiology is, at the most, theoretically laid down, and as it now stands is unsatisfactory.

In the third form, *alopecia bityrodes*, shedding of the coat is associated with desquammation of the epithelium and itching. This loss is never compensated at any future time; it is permanent.

The last variety, *alopecia symptomatica*, seems indigenous to the domestic animals. As its name indicates it is rather symptomatic of another primary affection. The induced baldness vanishes with the original disease. Hertwig observed three cases from tetanus, morbus maculosus and over feeding with clover, respectively. Muller describes a total loss of hair from overfeeding. Burmeister records the same as coming in the convalescent period of catarrhal fever. The therapy is to all intents and purposes useless. The author recommends for local alopecia,

℞

Spts. camph.,	℥ iiss,
Tinct. aloes,	ʒiiss,
Tinct. myrrhæ,	ʒ ij,
Tinct. canth.,	ʒ ss,

M.

Sig.—To be applied bis. ind. as a spray; afterward rubbing dry.

The work of Hoffman is valuable in that it presents to view a concise collection of the literature upon the subject.—*Repert. d. Thierhlk. Bd.*

FOOD DIGESTION AS INFLUENCED BY WATER.

Marlot has for a long time busied himself with the study of food digestion as prejudiced by the previous drinking o water. It has been with him a much vexed question whether horses should be given water before, or after feeding. He has solved the problem by experiments made upon two horses.

The first horse received four quarts of oats, and immediately afterward as much water as desired. After the lapse of a short time the same was killed, and a post-mortem held. In the stomach itself only a liter of oats were recovered floating upon much water; the other three quarts had been washed with the water into the intestines, where it existed in a state unprepared for assimilation. The digestion here is only partial, if indeed occurring at all, so that from the great bulk of the food the subject derived but a minimum amount of nutriment.

The second horse received water before being replaced in his stall, and then four quarts of oats. Precisely one quarter of an hour subsequent to the total consumption of the grain this animal was also killed, and examined in autopsy. All of the oats were yet in the stomach, and had already been acted upon to a slight extent by the digestive juices.

From these two practical demonstrations Marlot came to he conclusion that the same quantity of oats when fed to wo different horses may impart an amount of nourishment differing materially, according as the animals receive water previous or subsequent to feeding.

This same practitioner instituted another experiment with he same purpose in view. He kept a close watch upon the evacuations of a horse receiving water after each meal; in this effete material he recovered numerous oats in no way affected by their passage through the digestive tract.—*Norsk. Landmansblad.*

THE OCCULT SPAVIN.

It is not infrequent that the practitioner meets with a lameness exhibiting all the characteristic symptoms of spavin, and yet neither by ocular or manual examination is he in a position to emark a deviation in the physiological contour of the bones composing the articulation of the hock. Such a grouping of symptoms has been attributed to the "occult" spavin, which induces no visible defect except atrophy of the muscles in the gluteal region. Such cases may spontaneously recover; that is, the atrophied muscles attain their proper size, and every trace of a prolonged lameness vanishes.

We saw a horse that had suffered nearly a year from this hidden ailment, finally recover. We advised at the start that the animal be only moderately worked, and that he be turned loose in a box-stall with abundance of straw. This case led us to seek the seat of the irritation—not in the tibio-tarsal articulation, but in the stifle-joint proper. During the time the patient was lame, there developed, in the region of the infero-internal condyle of the femur, a hard growth, in the nature of an exostosis, the size of a hen's egg.

As a consequence of this discovery, we ever afterward, in all cases of hock lameness attributed to a spavin, examined the articulation at the stifle; in most of these we recorded the presence of an enlargement at the inner side of the femur, and reached the conclusion that in the plurality of cases where the hock suffers from occult or apparent exostosis, the stifle is also involved.

As a rule, the internal condyle of the thigh bone is involved, the process later embracing the articulating surfaces. The detection of the alteration presupposes a vast deal of practice and anatomical knowledge. To aid in this, the animal is loaded by his rider or otherwise, and the two posterior limbs brought evenly together.

Manual examination determines the afflicted side to be rounder and to possess fewer angles than its fellow of the opposite side while fever and pain are also found. It is good practice to become accustomed to the hypertrophied condyle in chronic spavin cases. Throughout the several years that we have recorded this peculiarity, we have observed but one exception to the rule, and that was in a horse exhibiting a large spavin, but *no lameness.*

Up to the present time we have been unable to explain the process of this metastasis, and we are likewise not in a position to say that the exostoses occur in the vicinity of other joints than these enumerated.

Respecting the therapy, it must be modified so that the stifle at the inner side be covered by the epispasticum, but to a lesser extent should friction be applied to the latter locality than at the hock.

Our experience with this growth and its direct results may be summed up in the following sentences: The spavin of the equine species is a complicated affection which not alone involves the tibio-tarsal articulation, but also the femoro-tibial in lameness. The occult spavin has its location in the stifle, or femoro-tibial joint.—*Berliner Wochenschrift.*

PRIMARY TUBERCULOSIS OF THE PENIS.

From certain nodular tumors upon the penis of a bull, it had become necessary to castrate the animal. Not long after this operation the latter was slaughtered, and the lower portion of the organ, possessing the new formations, sent to the veterinary university in Dresden. Approximately, ten inches removed from the urethral opening, two tumors were located, which approached a hazel-nut in size.

These were imbedded in the constituent parenchyma of the penis; section of this revealed a cancellated interior as a foundation matrix, and in the center a crumbling mass of whitish yellow material. About three inches from the latter nodules, the organ suddenly expanded to a considerable extent, being at the prepuce six inches in circumference. Dissection revealed this increase in volume to be due to a number of hard nodules situated in among the erectile tissue of the corpus cavernosum. Also, under the skin, between it and the latter body, in the loose and elastic connective tissue of the prepuce, numerous tumors. Mucous lining of the urethra normal.

Presence of tubercle baccillus could not be proven by the Ziehl–Gabbet method; upon the thin section of the formations themselves, however, abundant colonies were detected by following the Koch-Ehrlich staining. Cases of tuberculosis of the penis in the domestic animals are met but rarely.

From the character and extent of the infection, it is highly probable that the organisms had been primarily acquired through the act of copulation; and, secondarily, by some imperfection in the epithelium forming the cutis.—*Deutsche Ztsch. f. Thiermed.*

SCROTAL HERNIA IN A GELDING.

In veterinary literature the weight of opinion, as given by the greatest number of writers, is that scrotal hernia occurs only in the stallion, and that when found in the gelding it is immediately subsequent to castration. After this operation the inguinal canal has not had sufficient opportunity to become effaced.

It may be, therefore, that the communication of a case, occurring contrary to all known history, may be of general interest.

An eight-year old gelding, of good proportions and strongly made, was harnessed to a plough in the fall of the year, and used in a field in which numerous stumps and roots of fallen trees obstructed the way; over one of these latter the animal fell, but quickly thereafter arose. In attempting to urge the horse he moved only slowly, and when halted evinced so great a recklessness that it was advisable to put him in the stable.

Arriving there the animal at once lay upon his spine and maintained this position for some time; after this he suddenly regained his feet and seemed as sound as before the accident.

Several hours later the same symptoms became evident; the animal again becoming unquiet and assuming a dorsal position, remained so until free from all pain. At each time these periodic pains occured there could be noticed a swelling some ten inches in diameter, which protruded from the abdomen in the inguinal region and which disappeared when the patient reclined. About six weeks after the first attack the horse was led to me late one evening with the history that he was subject to attacks of colic at irregular intervals, which the owner feared would cause his sudden death.

The next morning we were able to confirm the facts as relate the night before, even to the smallest detail.

Before proceeding with an operation we had given the patien strong purgative and removed all feed. The day following the orse was hobbled and thrown and placed upon his back, the ateral bipeds being bound. Examination of the locality showed he inguinal ring to be of considerable diameter, easily permit-ing the passage of a hen's egg. Upon the affected side—the ight—an incision one foot in length was made, which traversed he enlargement parallel to the mesial line; the skin was dissected ight and left, exposing a considerable area and forming two mmense pockets.

The lips of the wound, at the edges, were brought in apposi-ion by tape suture, except at the posterior commissure, which perture was allowed to remain open. Through the latter balls f oakum were introduced until somewhat more than a pound ad been used. The opening was not sutured, thus holding the ontents securely within.

Being allowed to stand, the animal was in a few minutes taken o the stable, and the posterior limbs put upon an elevation some wo feet in height, and was kept under constant surveillance for eventy-two hours. At the end of this time the rear stitches ere severed and the cyst cleansed and refilled. After the expir-tion of the sixth day this procedure was again resorted to; some f the sutures being also renewed.

From this time on the oakum was changed every two days, he cavity being more loosely filled each time. Healing of the ound proceeded kindly and rapidly; at the end of the fourth eek the patient was discharged.—*Ber. Thier. Wochen.*

NEW MEMBERS ELECTED

O THE UNITED STATES VETERINARY MEDICAL ASSOCIATION AT THE MEETING IN BOSTON.

HONORARY MEMBERSHIP.—Prof. A. Chauveau, Lyons, rance, Director-General of the Veterinary Schools of France. natomist-Physiologist—Work on Contagious Diseases, etc.; roposed by R. S. Huidekoper, A. Liautard. Isaiah Michener, Carversville, Pa., born Jan. 25, 1812, 60 years; in active practice in eastern Pennsylvania and the border counties of New Jersey; was one of the earliest names mentioned in connection with the original Veterinary College in Philadelphia; attended "Dadd's Clinics" in Boston; honorary member of the Pennsylvania State Veterinary Medical Association; one of the first members of the profession to recognize and treat the disease which is commonly termed "Cerebro Spinal Meningitis"; also to bring it into public notice through his accounts in public periodicals; proposed by Thomas B. Rayner, W. H. Hoskins.

ACTIVE MEMBERSHIP.—Charles F. Douglass, D.V.S., American Veterinary College, Kingston, Jamaica; vouchers, A. Liautard, A. J. Coates. John W. Gadsden, M.R.C.V.S., London, England, 128 N. 10th street, Philadelphia, Pa.; vouchers, J. F. Winchester, R. S. Huidekoper. William Jakeman, Montreal Veterinary College, Halifax, N. S.; vouchers, J. M. Parker, L. H. Howard. H. D. Lambert, D.V.S., American Veterinary College, Salem, Mass.; vouchers, F. H. Osgood, L. H. Howard. William Lord, M.D.V., Harvard Veterinary Department, Portland, Me.; voucher, F. W. Huntington. Edward J. McLeod, D.V.S., Chicago Veterinary College, 1149 Niagara street, Buffalo, N. Y.; vouchers, N. P. Hinkley, John Wende. Thomas G. Sherwood, M.R.C.V.S., London, 854 Seventh avenue, New York City; voucher, R. S. Huidekoper. F. C. Wilkinson, V.S., Ontario, Claremont, N. H.; voucher, W. L. Baker. Benjamin Wende, V.S., Ontario, Millgrove, Erie county, New York; vouchers, N. P. Hinkley, John Wende. D. E. Smith, V.S., New York College, Great Neck, Queens county, New York; vouchers, R. S. Huidekoper, R. A. McLean.

RE-INSTATED.—E. C. Beckett, Harvard Veterinary College, 547 Albany street, Boston, Mass. Madison Bunker, D.V.S., American Veterinary College, Newton, Mass.

HELD OVER.—H. F. Doris, D.V.S., Amerieau Veterinary College, 3 Seventh street, Pittsburg, Pa.; voucher, W. H. Hoskins. J. D. Robinson, D.V.S., Chicago Veterinary College, 22 C street, Washington, D. C.; vouchers, A. H. Baker, E. S. Walmer. C. H. Pierce, V.S., Ontario, Minneapolis, Minn.; vouchers ait Butler, C. C. Lyford. H. W. Hawley, D.V.S., Chicago, hicago, Ill.; vouchers, A. H. Baker, S. S. Baker. A. D. Mc-enney, V.S., Ontario, Ann Arbor, Mich.; voucher, E. A. A. range. F. A. Duclos, V.S., Montreal Veterinary College, La-al University, Holyoke, Mass.

UNFAVORABLY CONSIDERED.—John Doris, Jr., D.V.S., hio Veterinary College, 152 Center street, Pittsburg, Pa. Wil-am H. Valway, V.S., New York College, 2698 Broadway, Cleve-nd, Ohio; voucher, William H. Howe.

MEMBERS RESIGNED.—John T. Claris, 627 Clinton street. uffalo, N. Y.

SOCIETY MEETINGS.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting of the Keystone Veterinary edical Association was held in Philadelphia, Oct. 11th, 1892, resident Dr. R. G. Webster in the chair.

The minutes of the last meeting were read and approved.

Dr. H. P. Eves, of Wilmington, Del., a delegate to the United tates Veterinary Medical Association, reported having attended e meeting held at Boston and was very much edified with the arning displayed and highly pleased with the entertainment rovided by the veterinarians of Boston. He also reported hav-g attended the Pennsylvania State Veterinary Medical Associa-on as a delegate from the Keystone, and was surprised at the umber in attendance, being greater than the United States As-ciation—that is, the attendance of the State Association was uch greater than he expected to see, and the United States uch less than anticipated.

The postponed election for Trustees resulted as follows: Dr. . Horace Hoskins, Dr. H. P. Eves, Dr. Charles Lintz, Dr. A. T. ellers, and Dr. James B. Rayner.

The application for membership of Dr. T. Earl Budd, Wood-ury, N. J., and Dr. Warren T. Edwards, Downingtown, Pa., were ceived and referred to the Board of Trustees.

Dr. W. H. Hoskins, essayist, read the following paper:

Mr. President and Gentlemen:

I come before you to-night with a double apology; the first one is, that I should be called so soon again after leaving the chair as your presiding officer to address you on the topics of the day; and in the second place, that these remarks should come to you in such an incomplete manner. For this I can only say that but three days' notice was given me in which to prepare a brief review of the questions that interest you in the veterinary world; and if I can but win your attention for a few minutes I will feel gratified in so doing and rejoice that our meeting has not been fruitless of some good. My reasons for the acceptance of this duty were wholly those of a sense of responsibility as a member in endeavoring to have your new officers successfully carry on the work of this Association during the coming winter, and in so doing to fulfill whatever task or duty that you may allot to me as a member; and in so far as it can be accomplished I shall consider it my duty to comply with your requests.

I have chosen the above outline of my subject because at the beginning of another year's work it seems to be such a one as may furnish us with thought and work during this coming winter. The many sudden and broad changes that have characterized the doings in the world of veterinary science during the past year seem to demand at our hands stronger cousideration, stronger work. It affords us an incentive that will bring to us at the end of our work a rich return, when we have properly considered and disposed of the great questions of importance that are knocking at our doors for aid in their final disposition. It also points strongly to the need of stronger veterinary organizations. The national one must soon tend in directions and lines that will lift it entirely from the consideration of those topics which are more or less local in character.

It is a strong incentive to State organizations to become more aggressive and to be better informed upon those topics which are of grave interest to their perpetuation and success as a profession and a science. It commends the development of stronger local organizations in large cities and towns around which center thickly populated counties and districts. Wherever sufficient members of the profession may be drawn together to form even a small organization affords part of the work that is before us to accomplish. It demands from us as one of the oldest local organizations to take the most aggressive part in many lines of new work, and to dispose of them in such a manner as will tend to enhance the value and good of our State organizations, and make more complete and broader the organization that shall represent us in national matters.

I therefore appeal to you, fellow-members, to not be unmindful of the duties that may fall to your lot during this coming year. They will be many, and they will fall thick and fast, and they must ever find you ready to fulfill your part, and thus complete the duty which you assumed when you entered the profession of your choice. None of us can afford to take a selfish view of the calling which we have adopted. It must not be considered wholly in the light of a means to secure a rich livelihood or of money-making; but we have entered upon a profession that needs to-day stronger men than ever, who are willing to render some services to make veterinary science what it is destined to be in America. The breadth of our calling is so unlimited that the time must soon come when we must act as a sanitarian in the broad sense of the word, as a police in the protection of our people from diseases which our animals and men are alike subject to, guard the great food sources—the supply of meat and milk; as well as to execute the regulations that shall insure to our people a complete safeguard from the dangers that are therein threatened. The time is not far distant when all this and much more will fall to your lot, and unless the preparatory work is done now and done faithfully for those who are to follow after you in your calling, the science and profession which you promised to uphold, will find itself ill-prepared to perform these duties and work; and upon you and I must fall the responsibility in great measure of any failure that may ensue in this direction. For these reasons I feel that we have no right to simply indulge in all the good things that may follow in the course of our work;

and to be forgetful and unmindful of the strong plans which our foundation must support in the future.

With ever increasing fidelity, associations must in the future take more recognition of the movements in the various veterinary colleges of our country. We must become stronger supporters of those schools whose intentions are to increase the requirements for admission; to broaden and strengthen their curriculums; to enlarge their facilities for instruction; to raise the standard of their requirements for graduation; and to encourage them with the support they need from us, that we should give, in order that they may feel that their labors are not unrecognized or unappreciated. We must alike be severe critics of those whose efforts are for the creation of immature schools, the offering of a lower grade of inducements for students to enter, and whose incentive in their work would seem from the outcome of their efforts to be that of money-making; and we must soon draw a line on these classes of new members of the profession in all our organizations.

The rapid multiplication of veterinary schools during the past year I very much fear bodes no good to our profession. Many of them I know are wholly unprepared to fulfill the requirements of completing such an education as is demanded by the public to-day, in many sections of our country, to properly perform the duties that may fall to their lot as veterinarians. Within the past year new schools have originated at Detroit, Michigan; Cincinnati, Ohio; Des Moines, Iowa; Kansas City, Mo.; Washington, D. C., while the older schools of Montreal, Toronto, American and New York, of N. Y., Veterinary Department of Harvard, University of Pennsylvania, Veterinary Department of Iowa Agricultural College, Chicago and Baltimore, with the various veterinary chairs in the Agricultural Schools of New York, Virginia, Ohio, Mississippi, Indiana, and some other States are still in the field. The school at Minneapolis for the present has ceased to perform active duties. I am safe in saying that all these schools have not originated from any demand by the profession or from the needs of any one section of our country. I do not deny the fact that there is room for them all; but I do laim and demand that they must broaden and strengthen their ourse of study and requirements to keep pace with the growth nd advancement of our profession in this direction. I am very ure they are not all qualified to carry on such work of so great esponsibilities, and the sooner that some of them close their doors he better for the profession in which we are concerned. I speak ow from the many unwilling admissions of many of those who re graduates of said schools and are willing to approve all that I ay when they consider their Alma Maters were created as money-iaking schemes rather than for the broadening and strengthenig of the veterinary profession.

If our associations, national, state, local, continue to admit iese graduates simply upon their possession of a diploma, we mply become forgetful of the duties that are ours to perform in roviding and planning for the future profession of America. uch inducements of two years (of less than six months) graduatg young men as minors, and cheap fees, and many other qually unfavorable inducements, are not such as to tend, in my timation to enhance the value of our profession in this country.

Our recognition or support may not alter the course of a sine school in our country; neither, perhaps, will our condemnaon or severe criticism of immature schools wipe one of them out existence; but I do believe it will retard their multiplication. nd if the veterinary associations of our entire country are a unit on the question of a higher and more advanced education than now given by many of our veterinary schools and colleges, I n very sure it will have a good influence in encouraging them broaden their curriculums and to attain the minimum standard hich we may create. If but this should be accomplished it will ace us, as organized bodies of the profession, in the proper light fore the public who are to measure our usefulness by the influce and by the kind and character of work which we perform; d the public will not be slow to recognize any move upon the rt of an organized body of our members to advance and engthen the usefulness of our calling. In the various channels work which we are called to perform they will not be slow to cognize our own just recognition of the need of stronger and better men in the future than have been produced in the past by the various veterinary colleges of our country.

I think it is incumbent upon the members of this Association to-night to take recognition of the action of the United States Veterinary Medical Association in the adoption of the amendment which was so unanimously carried at their Convention in September at Boston, and to hail with just pleasure and satisfaction this wise step on their part.

Amendment. "ARTICLE I. Any applicant for membership shall submit his name upon one of the Association's application blanks, duly vouched for by one or more members of the Association, or by the resident State Secretary of his respective State. He shall be a graduate of a regularly organized and recognized veterinary school, which shall have a curriculum of at least three years, of at least six months each, specially devoted to the study of veterinary science, and whose corps of instructors shall contain at least four veterinarians. If of a medical school a similar curriculum as to time shall prevail." This alteration not to apply to matriculants of the year 1892. It shall not be retroactive. nor apply to applicants who were college matriculants prior to its passage.

I think we should also make recognition of the fact that the American Veterinary College of New York has made the announcement that on and after 1893 her course shall be an obligatory one of three years. I do trust that she may be only one of the various two-year schools that will take this advanced step during the present year.

I think it is equally incumbent upon us that we should place upon record our feelings of disappointment and condemnation of the establishment of another two-year school at Washington D. C. I consider this movement to be one of the most dangerous and unexpected in the annals of veterinary science in this country. We certainly had a right to expect not a similar curriculum, but a broader and stronger one from such a source, than exists to-day in any of the veterinary colleges of this country It comes at a time when it produces among the members of the profession in this country one of the sorest disappointments that we have ever had to bear. I still hope that the feelings of the profession of our country may be so strongly placed before those who are the creators of this new movement that they shall modify heir announcement, and place it in conformity with the most dvanced veterinary colleges of our country. There can be no oubt but that with the strength of means and facilities that they ay secure in Washington it could be made the best and strong- st school in our entire country; and to none would result greater enefits than to those who shoulder its responsibilities if they ould rise up to the demands and requirements of the day.

Briefly I desire to call your attention to the duty which is ow imposed upon us as practitioners of veterinary medicine, o individually take up and experiment with tuberculin for tuber- ulosis in cattle, and mallein for glanders in horses. The work one by foreign investigators, and the more recent work of ex- erimentation done in our own country by the "Tuberculosis ommission of the University of Pennsylvania," and the results f the experiments by Dr. Leonard Pearson, and their compari- on with the results obtained in diagnosing tuberculosis by physi- al methods makes it incumbent upon us to take up this work nd so thoroughly test its value that we may intelligently de- ermine whether we can rely upon this as a complete and almost nfailing diagnostic agent for the detection of tuberculosis. I can ut think that certainly the results already obtained by the ex- erimenters warrant each one of us, and almost demand that we all give it personal tests as to its value, and bring into this ssociation the results of our work, that it may be placed upon cord and used for the benefit and promotion of our calling.

The experiments in the use of mallein as a diagnostic agent r the detection of glanders, by Drs. Pearson, Kilborne and De- chweinitz, bring to us such evidence of its value in this very portant direction that we cannot longer ignore the use of it in termining those obscure cases which we oft-times meet with, and which history has recorded many where they have done won- rful damage, without any positive evidence, in so far as physical gns were concerned, that would warrant the destruction of the imal. Any one of us during the coming six or eight months will have an opportunity of testing its value. The kind offer of the Bureau of Animal Industry to furnish us with material necessary to accomplish these experiments should not go unnoticed or ignored.

The work of our friend and fellow-member of this Association (Dr. S. E. Weber), in his extensive investigations in regard to the diseases of rodents, and the light he has shed upon the question of tuberculosis and many other important diseases of men and these lower animals, affords us thought for consideration, and may be the means of ultimately determining the causation and field of the development of this important disease, whose history and pathology have been wrapped in so much obscurity. It is to be hoped that he will continue his original work in this field, and that this shall be from time to time brought out for our entertainment and enlightenment.

The recent investigations and conclusive proofs of the infectious character of tetanus, that so long has defied the skill of the entire profession throughout the world, should not go unnoticed by the members of this Association. The possibility of giving immunity to animals by the introduction of certain remedies, and likewise immunity to be given by the transfusion of blood from the immuned animals, offers to us a haven of security that promises much for our advancement and our success in the future work in this direction.

The agitation this coming winter of a bill for the more thorough inspection of meat and milk for the cities in this State, should not find us unprepared to aid and support it with our united strength if it be so drawn that it meets with our approval as a law destined to be of great benefit to our people and indirectly to our profession. The need of such a law is unquestioned, and the only point for us to decide is in the character of a law which we may secure, and to avoid the dangers of it becoming semi-political in character, and by these means robbed of the great benefits which it promises to confer upon our people.

We should not be unmindful of the wonderful work achieved by the Bureau of Animal Industry in stamping from our country that exotic and frightfully extensive plague known as "Contagious Pleuro-Pneumonia." The achievement of our National Government through its Bureau of Animal Industry, in securing co-operation by State authority in dealing with this disease from a National and single standpoint at such a small expense, in so far as the work itself was concerned. Success for the value of the veterinary profession, when it is clothed with proper power, in doing for this country what has never been accomplished by any other nation on the earth where this disease has ever secured a oothold. This part of our National Government, this Bureau of broad-gauged leaders, should receive at the hands of our veterinary association in this country a most cordial vote of appreciation and praise. The remarkable results they have achieved in stamping out this bovine scourge that has long embarrassed and hindered and restricted our commercial advantages throughout he whole world, in the commercial supremacy that we should ver have held as producers and venders of live-stock.

Another point to which I desire to call your attention that lemands our recognition as a profession. I refer to the article n the October number of the *Druggist's Circular* in which a etter was published that questioned whether veterinary graduates r non-graduates could be considered as graduates of medicine in he eyes of the law, and as to whether druggists and pharmacists hould not place upon all their prescriptions which contained any ecognized poisons, a poison label, that may be the means of larming our employer, and end in the loss perhaps of a client. Ve certainly should demand of all druggists and pharmacists that ame respect for our prescriptions, as is accorded members of the edical profession; and should exact from them no discretion in uch a matter, but should simply follow the directions as indicated y our prescriptions. If in the event of an error on our part in riting the same, we should receive the same courtesy as our ister profession, and the prescription returned to our office for nformation or correction. The poison label, which might be ustly placed by this construction of the act, would call for very any uses of said label that would very often end in serious results, by the fears which would be created, and the failure to administer the prescriptions as directed.

At a recent meeting of the United States Veterinary Medical Association at Boston the failure to secure legislation looking to the proper recognition of the veterinarians in the United States Army was reported by the Chairman on the Committee of Army Legislation. He further stated that one of the chief reasons for this condition of affairs was the result of the lack of unity upon the part of the profession throughout the country, as to the needs or the united demand for the same. The lack of harmony, indifference and consideration of selfish interests had resulted in so many diverse views, reaching the committee in whose charge this bill was, that they felt that it was a difficult matter to decide what was wanted, and where the profession as a body stood on this important question. When we consider that we are living under the only civilized government which does not accord the veterinary profession any rank in our army, it is not hard to see what an unfortunate position we hold in the eyes of all the other civilized goverments of the world. Only repeated failures have been the outcome of the hard work done by the committees in this direction. It still is of so much importance that it should not be given up without continual agitation, and keeping of the question prominently before those at whose hands we can only expect help. We may ultimately find a fitting opportunity to secure this much needed legislation. The recommendation of that committee should not go unheeded during the coming year by the various veterinary organizations throughout this country, but starting from them as a voice of the profession in the various States, counties and cities which they represent, they should pass such resolutions commending the need of this act, and these to be presented by the Army Legislation Committee, would, no doubt, be a strong factor in aiding the accomplishment of this work. I trust that this Association will not fail to recognize their duty in this direction.

I might go on, fellow-members, calling your attention to many other points of equal importance and value to us, but inasmuch as I have already encroached very largely upon your time I will leave for you such other points of equal interest as I know are important, and demanding your consideration and recognition in your daily duties.

I thank you for the attention which you have given, and trust that these ill-prepared remarks may receive at your hands a fair consideration, owing to the short time I have had in preparing them.

A vote of thanks was tendered Dr. Hoskins for his valuable paper. The report of the Board of Trustees upon the application for membership was favorable. The report was received, and the applicants elected to membership. The Chair appointed as a committee to draw up resolutions expressive of the sense of this Association upon the short-term colleges in general, and the one in Washington, D. C., in particular, Drs. W. Horace Hoskins, H. P. Eves, C. Lintz, A. T. Sellers and James B. Rayner to report at next meeting.

On motion, adjourned. W. S. KOOKER, *Sec'y.*

PHILADELPHIA VETERINARY MEDICAL SOCIETY.

The Philadelphia Veterinary Medical Society held its regular meeting at the College of Physicians, Thirteenth and Locust Streets, Philadelphia, September 27th, 1892. President S. J. J. Harger in the chair.

Members present: Drs. Ridge, Maher, Bunting, Conard, Williams, Eves, Magill, Pearson and Conrow. Visitors: Drs. ohn Marshall, T. Earl Budd and Herman Wellner. New memers elected: Francis S. Allen, M.D., V.S., T. Earl Budd, D.V. ., Horace P. Keeley, V.M.D., and W. A. Wilfrid Turnbull, V.M.D.

Dr. Leonard Pearson read paper upon "Anthrax," discussed y Drs. Eves and Williams.

Drs. Ridge and Conard cited cases of stoppage of œsophagus in cows. Dr. Magill cited a case in a horse.

Dr. Conard cited cases of contagious conjunctivitis and keratis in cattle. Treatment: Two and one-half per cent. creolin sol.; bandage, atropia and boracic acid sol.

Dr. T. Earl Budd reported a case of dystokia in a bitch due to fractured pelvis; Dr. S. J. J. Harger performed section.

Dr. Ridge moved to suspend by-laws. Carried.

Dr. Conard offered resolutions protesting against the starting of a two-year veterinary school at Washington, D. C., by employees of Bureau of Animal Industry. Discussed by Drs. Marshall, Ridge, Eves, Williams, Pearson, Budd and Harger. Moved by Dr. Maher to adopt as read, and to send copies to Bureau of Animal Industry, Secretary of Agriculture, and secretaries of veterinary societies. Seconded by Dr. Eves. Carried.

Adjourned to meet October 25th.

A. E. CONROW, *Secy.*

The Philadelphia Veterinary Medical Society held its regular meeting at the College of Physicians, Thirteenth and Locust Streets, Philadelphia, October 25th, 1892. President S. J. J. Harger in the chair.

Members present: Drs. Ridge, Schreiber, Landis, Conard, Entrekin, Rogers, Zuill, Keely, Holdsworth, Tag and Conrow. Visitors: Dr. J. W. Adams.

Minutes of last meeting read and approved.

New member elected: J. W. Adams, V.M.D.

Communications read from Drs. Cooper Curtice, of Moravia N. Y., and M. Stalker, of Ames, Iowa, in answer to resolution adopted at last meeting. On motion communications ordere filed, and copies forwarded to *Journal* and REVIEW for publication.

Dr. Zuill moved that Dr. H. D. Fennimore's communicatio be received, and his name be transferred from active to corresponding membership. Carried.

Our essayist, Dr. Eves, being absent, Dr. Conard reported hi cases of contagious keratatis as having done well.

Dr. Landis cited case of abscess of rectum with chronic peritonitis and pleurisy.

Dr. Conard cited case of tumor in mesentary of small intestine large as Yankee bucket.

Dr. Rogers reported a case, he thinks, of contagious pleuro-pneumonia, discussed by Drs. Zuill, Schrieber, Ridge and Landi

Dr. Zuill censured officers for not having a paper read at thi meeting, and insists that all cases should be presented in writing.

Adjourned until November 22d, 1892.

A. E. CONROW, *Sec'y.*

MAINE STATE VETERINARY MEDICAL ASSOCIATION.

The initial meeting of the Maine Veterinary Medical Association was held at the Prebble House, Portland, October 11th, 1892.

Members present: Drs. Geo. H. Bailey, Portland; F. W. Huntington, Woodfords; W. S. Lord, Portland; A. Joly, Waterville; C. F. Dwinal, Mechanics Falls; H. H. Choate, Lewiston.

A letter was read from Dr. Russell, of the Maine State Agricultural College, expressing himself as being very much in favor of this movement, and regretting his inability to be present. Dr. Choate was nominated temporary chairman; Dr. Lord, Secretary.

Constitution and by-laws were adopted, and the following officers elected for the ensuing year: President, Dr. Geo. H. Bailey, D.V.S.; Vice-President, F. W. Huntington, D.V.S.; Secretary, H. H. Choate, D.V.S.; Treasurer, A. Joly, V.S.

The President appointed the following committees: Committee on By-Laws, Drs. Lord, Joly and Choate; Committee on Credentials, Drs. Huntington, Dwinal and Joly.

It was voted to hold the next meeting at the Dewitt House, Lewiston, January 10th, 1893.

H. H. CHOATE, D.V.S., *Sec'y.*

ILLINOIS AND IOWA STATE VETERINARY MEDICAL ASSOCIATIONS.

From reports received at very short notice from our issue of last month, we are able to announce only in this REVIEW the meetings of these two associations which have taken place—the former on the 16th and 17th of November, and the latter on the 10th and 11th of November.

We hope that both meetings were successful, the attendance large, and that their secretaries will do us the favor to send us minutes of the transactions for our readers.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

A meeting of the California State Veterinary Medical Association was held at the Baldwin Hotel, San Francisco, September 14th, 1892.

The meeting was called to order by the Vice-President, Dr. Wm. F. Egan, of San Francisco.

Upon roll call the following gentlemen responded: Drs. Egan, Witherspoon, Pierce, Masoero, Spencer, Sr., Spencer, Jr., Burns, Orvis, Wadams, Powers, Neef and Archibald. Visitors, Drs. H. and T. Carpenter.

Letters of regret were read from absent members.

Dr. Pierce, of Oakland, then read a very practical and interesting paper on "Fractures." The essayist described numerous cases which had come under his notice; he also described his methods of treating same. A lively and animated discussion followed, in which all the members present joined.

The Committee on Legislation were then called upon for their report. The Secretary read the report and also read the views of the southern members on the subject.

Drs. H. and T. Carpenter were asked to give their opinion. Thereupon Dr. T. Carpenter rose and made a very exhaustive speech, reviewing the subject both from a professional and non-professional standpoint. After a long discussion, it was finally decided that a meeting of the veterinary practitioners of the State of California, irrespective of Association, be called, and the subject matter of legislation be laid before them. Is was also decided that the Association adjourn for a short time in order that some plans could be made to bring about such a meeting. A motion to adjourn was carried.

The meeting being again called to order, the following named gentleman were elected members. Dr. J. C. C. Price, Los Angeles; Dr. R. H. Powers, Chicago; Dr. W. Skaife, San Francisco.

The Secretary then proposed the names of the following gentlemen: Dr. J. Graham, Fresno; Dr. W. Carmichael, Hanford; Dr. Rowland Lord, San Jose.

The Secretary then spoke at some length on the subject of having as many of the members as possible join the United States Veterinary Medical Association, and having the California State Veterinary Medical Association well represented at the meeting of the above Association in Chicago next year. He endeavored to portray the benefits which the veterinary profession of the United States would receive from this organization. He stated that it was his opinion that the veternary practitioner would receive more benefits from this organization than from his local Association.

The Chair then declared nominations of officers for the ensuing year in order, and the following were elected: President, Dr. Wm. F. Egan; Vice-Presidents, Drs. Spencer, Jr., and Whittlesey; Secretary, Dr. R. A. Archibald; Treasurer, Dr. C. B. Orvis. Directors.—Drs. Spencer, Sr., Burns and Wadams. Board of Examiners.—Drs. Maclay, Orvis, Maspero, Rowland and Morrison.

There being no further business, meeting adjourned to meet in Los Angeles, December 14th, 1892,

R. C. ARCHIBALD, D.V.S., *Sec'y.*

OBITUARY.

EDWARD TAYLOR CAMPBELL, D.V.S.

It will be sad news to the graduates of the American Veternary College who knew Dr. E. T. Campbell to hear of his death, which took place on the 24th of October, at White Plains. Dr. Campbell had been sick for a long time, even suffering with phthisis when at college. He had been obliged to give up practice for some time, and was at the time of his death living with his father. He had, in the short time that he practiced, suceeded in making a great many friends. He graduated with the class of 1889.

CORRESPONDENCE.

Editor Review:

On page 124 of REVIEW, the *New Era* gives the result of the analysis of Kendall's spavin cure.

Now you will find this analysis, or nearly the same, in the *Druggist's Circular* of April, 1891, as follows:

℞ Turpentine spt.,	℥ i,
Alcohol,	℥ ii,
Camphor,	℥ ss,
Iodine,	grs. xxv,
Oil rosemary,	ʒ i,
Petroleum (heavy)	ʒ ss.

Also the same issue gives analysis of Gombault's caustic Balsam, or a preparation similar to it:

℞ Croton oil,	ʒ iv,
Cottonseed oil,	℥ ii,
Oil camphor,	ʒ i,
Oil turpentine,	℥ ii,
Oil thyme,	℥ ss,
Kerosene,	ʒ iv,
Acid sulphuric	M. xx.

Mix croton oil and cottonseed oil, then add sulphuric acid gradually, stirring constantly; then add the remainder.

Yours, etc.,

W. H. RIDGE.

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AMERICAN VETERINARY REVIEW,

JANUARY, 1893.

EDITORIAL.

THANKS AND SUGGESTIONS.—Our suggestion of the proba- le discontinuance of the publication of the REVIEW, and the ccompanying appeal to our delinquent subscribers has not been vithout effect, but has met with a handsome response, and we vail of the earliest opportunity to tender them our thanks for heir appreciation of our position. The appeal has also furnished he occasion to many of our friends to write us letters expres- ive of their warm appreciation of the work done by the REVIEW. n these expressions we recognize the most satisfactory reward f any we could have received for the efforts we have made, and e cannot allow the present issue to reach our readers without lling them how much we value these proofs of the friendly feel- gs they have so frankly and kindly conveyed. We desire also assure them of our increased willingness, and renewed deter- ination to continue our endeavors in behalf of the honor and terests of the profession we serve. But permit us at the same me to ask of our veterinarians something more than the pay- ent of their subscription dues, for though this may help to pay e expenses of publication, it is not sufficient to make the jour- l all that it ought to be in other respects, viz., interesting as ell as instructive.

Our columns being open to all, a question like this occurs:

Ought not advantage to be taken of this freedom of our columns to place on record such interesting facts as are met with in daily practice, and each one of which becomes one of the stones which in their aggregation form the grand edifice of veterinary science which we are all interested in erecting? Let us look at our American publications, and count how many out of the many hundred pages which are necessary to constitute one of our yearly volumes are occupied by "Special Records of Cases," and how many of these might be published if all were to contribute who might do so. Suppose that out of the entire mass of our practicing friends each one should report one case (one only) annually, and who has not in a year, at least, some single cases of unusual or even of but ordinary interest worth describing? How immense would be the amount of material in every branch of our profession which would be thus accumulated, and how greatly the American members of the veterinary profession might be benefitted! Of course we can obtain and copy much information from the numerous journals published in Europe and received in this country, but is it not time for us to prove to the veterinarians on the other side of the Atlantic that there are among American veterinarians as good observers and as careful recorders of their observations as themselves?

The trouble with us is that we are not addicted to literary work. We watch our cases, we carefully observe the varying course of a disease or of an operation; we feel satisfied that in the result our best efforts have been both taxed and rewarded, but there we stop. It is an error and a wrong which we are inflicting upon ourselves and upon our profession. Records of cases, whether successful or not, are obligations due to our brother practitioners, and we should respect our obligations and fulfil the duty they impose as a matter of professional conscience as well as public and private interest. We do not believe that any of the veterinary-publications of this continent will decline their hearty co-operation in the performance of this obvious and imperative duty.

ORIGINAL ARTICLES.

THE SCIENTIFIC INVESTIGATIONS OF THE BUREAU OF ANIMAL INDUSTRY.

By Dr. D. E. Salmon.

Considered as an abstract proposition, there is probably no member of the veterinary profession who is not willing to admit the desirability of original scientific research. To the liberal minded members of the profession, the value of such research for the development of science, for the perfection of our practice, and for raising our profession to a higher plane in the eyes of the world must be apparent. It has been generally agreed that the reproach of both the medical and veterinary professions of this country has been the lack of activity and the poverty of results in the field of scientific investigation.

Every veterinarian who takes pride in his profession, and is at the same time a patriotic citizen of the United States, must have a feeling of regret that such a condition of affairs could exist, and he must equally feel an interest in all efforts made to correct it. While we should feel no jealousy of the scientific workers of the Old World, and should welcome every contribution which they make to the fund of existing knowledge, we should certainly rejoice at every effort made in a scientific spirit in this country to conduct researches of the same quality and the same value as are made by the most advanced students in other lands.

This, it appears to me, is a legitimate deduction which may be drawn without fear from our common knowledge of patriotism and professional pride in all times and all countries. More than this, if I mistake not, it is one of the objects for which this Association exists, to promote and encourage scientific research. If I am correct in this, it follows that both the young experimenter, who has taken his first steps in original research, and the more experienced one, whose ambition leads him to attack the most difficult problems, should equally meet with welcome and favor when they bring their trophies for the adornment of the organization of which they are members, and which represents the veterinary profession of the country.

In saying this, it is not my purpose to take the ground that a paper read before this Association, or the results of the investigations of members published elsewhere, should not be discussed and criticised. On the contrary, it may be freely admitted that it is one of the most important of our privileges to discuss such papers, and in so doing to bring out points which may have been obscure, or to call attention to conclusions which may be untenable. But the investigator has a right to expect in such discussions that this Association is gratified at every effort, however humble it may be to pierce the mysteries of nature, and that when he brings his results before it or when these are introduced by others, he will be received with courtesy, and that any criticisms will be fair and truthful.

It is vital to the success of this Association that such expectations should not meet with disappointment. Our great need is that we should have more original investigations—that the many peculiar problems which confront us in this country should be solved, and that they should be solved, if possible, by our own members.

These remarks are made by way of introduction to my paper, because this is the first occasion since I have been a member of this organization that it has been necessary for me to defend my work and my character from unjust assaults, made, not in the heat of debate by an individual, but with deliberation by one of our most important committees, and at a meeting from which I was unavoidably absent. The chief points of that report which relate to me I have already discussed in an open letter which you have all had an opportunity to read. (*Jour. Comp. Med.* and *Vet. Arch.* and AM. VET. REVIEW, both for January, 1892). In that, however, I was unable for want of space to treat with any detail the scientific questions involved, and consequently I shall take some of these up at this time.

To remind you of the tone of the report made at the last meeting of this Association, I will quote only two sentences, which are taken from near the end; they read as follows:

"Having taken the investigation of swine diseases as a fair sample of this Bureau's scientific labors, are we to be expected to place any dependence upon the accuracy of the statements emanating from its officers concerning such work, especially when they conflict with the results obtained by men like Paquin and Billings, unless the work of the former is confirmed by experiments conducted by independent and unprejudiced observers of recognized ability?

"How can we as a profession feel anything but disgraced when we think of the opinions which must be held in Koch's laboratory, the greatest bacteriological laboratory in the world, concerning our Bureau of Animal Industry, and its scientific work?"

Is there any one here who can find in those two questions any favorable appreciation of the scientific investigations of the Bureau of Animal Industry, or any encouragement for the scientists of that Bureau, several of whom are members of this Association, to continue their labors in this their chosen field? Quite the contrary. The entire field of scientific investigation in this country can be explored without finding an example of such rank injustice or of such uncalled-for defamation. It is for this reason that I propose to take up the matter at this time and show how accurate have been the reports of the Bureau, and how untenable the positions of those who assailed them.

Billings has published an abstract of the paper of Frosch, referred to so much in Peters' report, under the title of "Billings' Investigations Vindicated," and Peters endeavors to give the impression that Frosch's report endorsed the various positions which Billings has assumed, and shows that the Bureau reports have been incorrect and unreliable. It is true that he does not undertake to prove this by a citation of the facts, a course which would, no doubt, have been inconveniently troublesome, but his whole argument gives this impression, as is sufficiently shown by the short quotation which I have made.

Now, what are the facts about this subject? In the first report of the Bureau, that containing the work of 1884, the cause of swine plague was spoken of and figured in liquid cultures as a dumb-bell micrococcus. In recent years I have laid no stress on that early work, because it was done soon after I went to Washington, when bacteriology in this country was in its infancy, and when the Bureau had neither the instruments, the laboratory facilities, nor the assistance which we now know to be essential for such investigations. It is also well known that I had many other duties at that time, such as the organization of the Bureau, and the investigation and control of an outbreak of pleuro-pneumonia in the Western States, which caused several long absences from Washington, one of which was of more than three months' duration. This is no reason why my scientific conclusions at that period should be received on any less evidence than is required from other people, but it is an explanation as to why the germ then figured was not studied under different conditions of culture, and in its effects upon different animals so that its identification by other investigators would be easy and certain.

It is evident of course in the light of to-day that we cannot claim to have established the fact that the micrococcus of 1884 was a specific pathogenic germ because we did not give the means for the subsequent identification of this germ either by other investigators or ourselves. It is significant, however, that a disease of swine has since been studied in Germany and in the United States the bacteria of which grow in liquid cultures as did the germ figured in the Report of 1884. There is only one discrepancy, and that was explained long ago and before any one else had discovered it. It was stated in that report that the micrococcus liquefied gelatine. The error was owing to my cultures being then made in liquid media after the Pasteur method, as on account of lack of assistance and laboratory facilities the gelatine method was impracticable. Because of changes in the laboratory and my long absence my cultures became shifted about and in some cases the labels misplaced. On my return it became necessary to hurriedly prepare my report, and a culture supposed to be the same as that previously photographed was plated to determine its effect on gelatine. The gelatine on this plate was liquefied, and on the strength of this one experiment the statement above referred to was made in the report. The error was afterwards discovered and corrected by me, but it is still referred to by unscrupulous writers as a reason why the micrococus of 1884 could not be identical with the micrococcus described in 1886 and in subsequent reports.

A discussion of this question is of little importance at the present day, particularly when the one who made the investigations in question has since had the whole field worked over with all the appliances of modern science and has unreservedly published the results. These old reports which were made before exact bacteriological methods were introduced into this country, are only referred to now by those who wish to discredit the work of the Bureau; but they forget that if it is impossible at this time to prove the conclusion that the micrococcus of 1884 was identical with that of 1886, it is equally impossible for them to prove that the two were not identical.

What is well-known to all of these writers is that under my direction the laboratory facilities of the Bureau were rapidly increased, that the work of experimentation was divided, that proper instruments were obtained, and that the results from that time to the present have been equal in accuracy, detail and importance with those obtained in any other laboratory in the world during the same period. In the report for 1885 the microbe of hog cholera was accurately described and you may ransack the literature of the world for any description made previous to that time by which you can identify that germ.

In the report for 1886 the germ of the American swine plague was described and the differences between this and the hog cholera germ were plainly indicated. In the report for 1885 the disease investigated was referred to as swine plague, but before the following report appeared we received the report of Schütz on *Schweineseuche* and also found that we had a disease of the same nature in the United States. With the two diseases before us we decided to call the one swine-plague which appeared to be identical with the *Schweineseuche* of Germany. Since *Schweineseuche* can only be translated as *swine plague* this course appeared to be necessary to avoid confusion; and if this example had been followed by others who wrote afterwards, the confusion which is now found in the nomenclature would not exist.

The impression which Billings and Peters attempt to give is that the investigations of Frosch sustain the claims of Billings and refute the conclusions of the Bureau of Animal Industry. This impression is absolutely false as can be easily proved. It is true that Frosch was led by reading Billings' misleading, and, in many respects, incorrect reports, to express opinions uncomplimentary to the Bureau and discreditable to himself on subjects of which he knew no more than any other reader of the reports; but so far as his scientific investigations go, and that is all the evidence offered by him which is worth anything, he sustains the reports of the Bureau in every important respect.

After what has been read in your presence and published by our journals, I suppose the most of you are surprised that I can make such a statement. If I make it I am prepared to prove it, and I feel sure that no man can contest the evidence which I offer.

What was the first position taken by Billings in regard to the germ which was described by the Bureau in 1885? We will take his report published in 1888 as authority, as he then had given two years to the investigation, and he certainly cannot therefore accuse us of using his prematurely expressed opinions in making this argument. After two years of study and investigation, with the advantage of having our reports for 1885 and 1886 in his possession, he deliberately states that no such germ as our hog cholera germ was found by him, that such a germ has no existence, and that our germ was a fabrication or, to use his own words, "a forgery."

Referring to the Bureau experiments of 1885 he says: "Furthermore, their value is absolutely nullified for the simple reason that no such germ exists in connection with swine plague as that described above." (University of Nebraska, Second Report from the Patho-Biological Laboratory, 1888, p. 54.)

Again he says: "By thus ignoring them, he silently admits they were not 'un' but 'well-founded statements'; and hence as he has not, and cannot, prove them to have been, or be, erroneous, and those which he alludes to of 1885 are of the same nature, I emphatically declare that all Salmon's assertions with regard to the specific microscopical appearances of any true and specific pathogenic micro-organism in connection with hog cholera to be one continued series of 'unfounded statements' down to the issue of his report of 1886." (Loc. cit. p. 68.)

Once more he says: "I positively assert that Salmon's assertion of a distinct germ for the disease which he now calls hog cholera is erroneous, and that the description of that object is a forgery; that it does not exist or occur in any form of the American swine plague, and that neither Salmon nor any one else can demonstrate the presence of that object in the tissues or blood of any hog that has died of swine plague in any part of this country, if the examination is made before cadaveric changes have taken place.

"That the object described by Salmon as the germ of the hog cholera cannot be cultivated from the tissues of any animal that has died of hog cholera or swine plague." (L. c. p. 74.)

He returns to this subject as follows:

"That this substance does not represent a spore condition or have any relation to spores, is, to my mind, entirely beyond all question, as I have searched most diligently for spores in old and fresh cultures, and others made at all kinds of temperatures within the biological limits of these organisms, my search being inspired by the description of what I pronounce a forgery, of a germ (which represents a spore), as the cause of swine plague, by Mr. Salmon in 1885, and again in 1886, as the cause of an assumed porcine pest, to which Mr. Salmon now gives the name of 'hog cholera.' This Salmon object does not exist, never has existed, and never will have any etiological connection with the American swine plague, as has been conclusively demonstrated in this report." (L. c. p. 111.)

In his *post-mortem* notes he says:

"Though the lesions here described must and will completely fill Mr. Salmon's picture of his 'hog cholera,' described in his report of 1886, but in this, as in every other case, Mr. Salmon's specific 'hog cholera microbe' was missed, and 'it ever will be missed" in the American swine plague, no matter who seeks it, or how much time they spend in the hunt." (L. c. p. 136.)

In another *post-mortem* note he says parenthetically:

"It does not seem as if any one could have seen more extensive lesions in the large intestine, which Mr. Salmon says are characteristic of his 'hog cholera,' yet his manufactured germ of 'hog cholera' never had any connection with the lesions in this hog." (L. c. p. 163.)

At the conclusion of his *post-mortem* notes he added:

"After several hours spent at this useless job, we were unable to find any other micro-organism than that invariably found in every case of swine plague we have investigated, and which has been described as a 'belted ovoid organism which colors at its pole ends,' and which bears no resemblance to the Washingtonian-Bureaucratic nondescript." (L. c. p. 164.)

I have already made enough quotations to demonstrate Billings' position on this question in 1888, when his report was written; but it is my object to show that this was the main idea of that report—the conclusion upon which the whole structure was built. As so much depends upon this one fact I trust that you will bear with me while I demonstrate that from the beginning to the end of the four hundred pages these assertions are repeated as the corner-stone of the whole argument.

Describing an autopsy made by himself and Dr. Roberts, of Creighton, Neb., he adds:

"The above case is of special interest, and is only introduced here because if there ever was a case of swine plague which absolutely corresponded in every particular to Mr. Salmon's 'hog cholera,' this one did. Hence the most exact search was made in seeking micro-organisms, but in the blood, in the spleen, in the liver, in the lymph-glands, both Dr. Roberts or myself could not find any other organism than that described by me in this report as the only germ of swine plague. Cultures were made and the same organism developed. Dr. Roberts being here with me, and interested in this work, as well as being a Regent of the University, he was doubly interested in endeavoring to find anything like the organism described by Mr. Salmon as occurring, according to him, in just such cases. Here was no room to say with Salmon, the lungs being affected, the germ of swine plague and that of hog cholora may both be present. After spending more than an hour in examining and re-examining the fresh organs, all of which were kept carefully covered, except for the moment necessary to clip out a small piece of tissue, we gave up the search, finding nothing but the one organism, and nothing resembling in any way the one described by Mr. Salmon in 1885 as the cause of swine plague, which had no polar staining whatever, and in 1886 as the cause of his 'hog cholera.'

"Such testimony as this should be conclusive. A mistake is absolutely impossible under the circumstances. This result simply corresponds with over five hundred such experiences." (L. c. p. 259.)

Finally, referring to my experiments in producing immunity in pigeons with the chemical products developed during the growth of the hog cholera bacterium, he writes:

"Hueppe seems to be absolutely unaware of the fact that the experiments he refers to were published in Mr. Salmon's report of 1885, when he said that the peculiar organism, which he then called the 'new microbe of swine plague,' was entirely different from that of Schütz. Hueppe is also unaware of the fact that that same organism suddenly became the cause of Mr. Salmon's 'hog cholera' in 1886 as he is that that same organism has no existence in the American swine plague." (L. c. p. 394.)

Two pages further on he says:

"With this, apparently, positive evidence in his hands, why did not Mr. Salmon proceed with such valuable work in 1886 and 1887, not to speak of the present year?

"Why does he not mention any further experiments of the same kind in his report of 1886, or his later publications?

"What is he employed for but to do this thing?

"The true answer is easy to discover!

"*Because Mr. Salmon is fully aware that no such organism as his swine plague 'new microbe' of* 1885, *or his 'hog cholera' of* 1886, '87 *and* '88, *exists as an etiological moment in swine plague.*" (L. c. p. 396.)

These extracts are certainly sufficient to demonstrate Billings conclusion as to the germ of hog cholera up to the time his report was written in 1888.

Was he right or wrong in his conclusion that no such germ as the hog cholera microbe existed, and that it had never been found and never would be found in the American swine disease? Is there any one in this Association, or, indeed, any one in the country, who believes that Billings was right and the Bureau wrong on this fundamental question? You all know better. You know that all who have since investigated the question have acknowledged the reality of the hog cholera microbe and its etiological relation to that disease. Even Billings himself has since adopted it, and in the September (1892) number of the *Journal of Comparative Medicine* he gives a figure of it, which does not correspond in the least with the figures in his report, or with his description of it as an ovoid, belted germ" morphologically identical with the microbe of *Schweineseuche.*

All the statements of his which I have quoted were, therefore, radically wrong so far as they denied the existence and the etiological relation of the hog cholera germ. Were they wrong as to the germ which he found at that time? This question we will consider later, but it should be remarked here that Billings claims to be a bacteriologist, and that consequently he should be able to discriminate between two such radically different germs, especially after the points of difference have been so carefully pointed out as they were in the report of the Bureau for 1886.

Under such circumstances the investigator's own conclusion must be taken, when it is given in such positive language, and no one has a right to go behind it and claim that the investigator meant something different from what he wrote. The investigator has the germs under his own eyes, and if he cannot tell what germ he has how ridiculous it would be for some one else, who has never seen the germ, to attempt to decide from the written description of the man who himself cannot tell!

In the face of these facts, how could the Committee on Intelligence and Education pretend in their report, at the Washington meeting, that the discovery of the identity of the Billings swine plague germ (as now accepted by him) with the hog cholera germ of the Bureau, sustained the claims of Billings and showed the Bureau reports to be unreliable? How could the committee record its belief that his work was "really correct and valuable," and that ours was a disgrace to the profession? How absurd this is when it is apparent that the man, who in his report reiterated again and again his conclusion that no such germ existed, is only too glad to give the impression now that this was the germ he was working with from the first.

How could the committee, with such undisguised exultation, tell us that "Dr. Billings boldly announces that he found his germ of swine plague in July, 1886, among the first pigs that he examined in Nebraska, which had died of the disease." Did the committee stop to inquire what germ he found at that time? Did they take into account his many denials of the existence of any germ which had the least resemblance to the hog cholera germ of the Bureau reports? If so, how can they come before this meeting and try to give the impression that the germ which Billings first found in Nebraska was identical with the hog cholera germ of the Bureau? These are serious questions, and relating as they do to an attack upon the reputation of individual members of this Association, as well as upon that of the Bureau in which veterinarians are especially interested, we have a right to demand that they be answered.

(*To be continued.*)

REPORT OF COMMITTEE ON INTELLIGENCE AND EDUCATION.

Austin Peters, M.R.C.V.S., Chairman.

"Do not repine, my friends," said Mr. Pecksniff, tenderly, "do not weep for me. It is chronic."

These remarks of Mr. Pecksniff, Mr. President and gentlemen, seem to apply to me upon the present occasion; not that I am in the condition that Mr. Pecksniff was in when he uttered them, but it seems as though my chairmanship of this committee were a chronic complaint, when I rise to read its report for the third consecutive year. Two years ago I felt like a boarding-house keeper who had a nice roast for her boarders. A year ago by taking the remnants of the roast and adding a few turnips, carrots and onions, I felt that I could prepare a tolerably palatable stew, but now I find that I have but a few gristly scraps left with which to compound a hash, and if there are a few bare bones left over I fear that there is so little upon them that a soup made from them would be very thin and watery; therefore I pray you that I may hereafter be relieved from the arduous duties of chairman of the Committee on Intelligence and Education, and a successor appointed with a fresh fund of facts and ideas with which to regale you.

In preparing this report I shall divide it as I did the one last year, first considering the subject of veterinary education; and after concluding what I have to say upon this question, I will briefly call your attention to a few other matters that may prove of general interest to you.

In my communication of last year I called your attention to the fact that while some of our veterinary schools gave a three years' graded course, the curricula of others comprised but two winter sessions of six months, or less, each; but that in my opinion the advantages of the longer period of study vere to a great extent counterbalanced in many instances by he short course institutions having a greater number of able eterinarians upon their faculties, with wider experience as eachers, and that about as much instruction as regards the umber of lectures and clinics is crowded into the two winter erms as is spread out over three years in the longer-course nstitutions. The advantages possessed by the longer period f study is that the student retains the knowledge he acquires lowly much better than that which is crammed into him in short space of time, and that he assimilates the information hat he becomes possessed of gradually much more satisfactorily than that which he receives in a marvelously short vhile.

Another advantage of the longer course of tuition is that here are certain branches of medical study that cannot be ursued properly unless the pupil has the benefit of laboraory facilities, where he can demonstrate facts for himself, or repare specimens with his own hands. A chemistry course, or example, which consists of a number of lectures comprisng a dazzling and remarkable series of experiments from beginning to end, may be very entertaining and amusing, but is f little benefit as a means of practical instruction compared o laboratory work where the student can become familiar vith common chemicals, their behavior under ordinary conlitions, and a few simple tests for their detection. The same s true of histology, pathological histology and bacteriology. ectures are not satisfactory in comparison with work in the aboratory where the future veterinarian can learn to cut, tain and mount sections, stain and cultivate germs, and make nicroscopical examinations of his work for himself. The dvantages possessed by the agricultural colleges that give eterinary degrees are in their facilities for laboratory work: nd while they may be weak in the means for imparting ctual medical and veterinary knowledge, yet they are strong n the scientific branches of instruction; therefore if their raduates had to hustle for an existence in competition with raduates of regular veterinary schools, they might starve to leath, yet we see them fitted to enter the field of original cientific research and acquit themselves with a fair degree o credit, while the regular veterinary graduate has very littl conception of how to proceed in this class of work.

At the same time I believe that the veterinary scientis should be a graduate of a school for the exclusive study o veterinary medicine; that he should first be instructed how to rustle for a living as an every-day practitioner, and tha then, if his inclination lead his footsteps toward the paths o science, he should take a post-graduate course to fit himsel for this work.

Instruction at an agricultural college should simply b looked upon as an excellent preparatory training for a veterinary education, and the knowledge of chemistry, care and breeding of animals, physics or microscopy as a great advantage in his future work, but the only degree to be given by these institutions should be B.S. or B.A.S., and should not have any more to do with his acquiring a veterinary degre than the title of A.B., A.M., or, Ph.D., and it seems to me that granting veterinary degrees by colleges of agricultur should not be encouraged by us, and that these institutions are diverging from their proper channels when they do so.

In my last year's report I dwelt at some length on the importance of a higher standard of education for matriculation in our veterinary schools, and that it was perhaps as important, or possibly more important, to first secure a reform here before taking action upon the length of the period of study after entering. In most of our veterinary institutions any pretence of a matriculation examination is a farce, and even in those where they require anything like a high standard of education for admission it is doubtful if it is lived up to, and if it were it would be found that they would have very few students in attendance.

You will doubtless remember that at the Washington meeting when this portion of the report of the Committee on Intelligence and Education came up for discussion, the members present thought that it was of much greater moment to attempt to secure a three years' course in our veterinary colleges, and that the matriculation standard would advance as the requirements of the schools advanced, and that in the future our Association ought only to recognize the graduates of such institutions as require a three years' graded period of study.

The result of these deliberations was that the following amendment to our Constitution was offered at the Washington meeting to be acted upon during our meeting here:

"ARTICLE 1.—Any applicant for membership shall submit his name upon one of the Association's application blanks, duly vouched for by one or more members of the Association, or by the resident State Secretary for his respective State. He shall be a graduate of a regularly organized veterinary school which shall have a curriculum of at least three years, of six months each, especially devoted to the study of veterinary science, and whose corps of instructors shall contain at least four veterinarians. If of a medical school a similar curriculum as to time shall prevail."

This alteration to go into effect after the annual meeting of 1892. It shall not be retroactive, nor apply to applicants who were college matriculants prior to its passage.

If it be your pleasure, gentlemen, to accept this amendment to the Constitution, I have only to add my hearty Amen!

Some friends of the profession are optimistic enough to hope that some day we may have a national board of examiners to examine the students graduating from all the schools of veterinary medicine in the United States, those passing to be members of the Veterinary College of America, on a plan similar to that governing the M.R.C.V.S. of England to-day. But I fear that if this scheme is even advisable its adoption is a long way off, and meantime I think that the United States Veterinary Medical Association is now in a position to act to a certain extent as censor of veterinary medical education upon this continent. We can certainly put ourselves on record as being in favor of a three years' graded course of study, at least, (with no objection to a longer one) and a matriculation examination sufficient to show that the student has an education that will enable him to profit by the instruction he is to receive. We should only admit to membership men who graduate from schools that meet with our approval, and in this way we can perpetuate this Association as a body of enlightened, learned men, ready to do all in their power for the advancement and welfare of veterinary science, and always striving for the improvement and well being of a humane and useful profession.

These requirements are now met by the Veterinary Departments of Magill University, the University of Pennsylvania and Harvard University; and the American Veterinary College is about to inaugurate a three years' course. Its faculty have for some time realized the importance of the change, but until recently the facilities of the school were insufficient to meet this demand. On the other hand, we have an ever-increasing number of the veterinary colleges pure and simple, with two winter sessions of six months each, and also the veterinary departments of agricultural colleges and State universities which, while they meet with our views as regards length of course and matriculation requirements, are deficient in the number of their veterinary necessities and the clinical advantages that they are enabled to furnish for their students, and in some instances the means for the acquirement of a knowledge of anatomy by work in the dissecting-room is woefully lacking.

The following is a list of the veterinary colleges not already mentioned that are exclusively such. I do not know whether it is complete or not, but any additions or corrections I shall be glad to receive. In Canada there are, besides the Veterinary Department of Magill University, three schools, two of which are French, l'Ecole Veterinaire de Quebec, and l'Ecole Veterinaire Française de Montreal, a branch of Laval University; the other institution is the Ontario Veterinary College of Toronto.

In the United States there is the New York College of Veterinary Surgeons, at New York, the Chicago Veterinary College; the Veterinary Department of the Detroit College of Medicine; the Ohio Veterinary College, at Cincinnati; the Iowa Veterinary College, at Des Moines; and the Kansas City Veterinary College.

The following universities grant veterinary degrees: The Veterinary Department of the University of Minnesota; the Iowa State Agricultural College; the Veterinary Department of the Ohio State University; Cornell University; and, possibly, others of which I have no information.

And to crown all, while glancing through an agricultural paper the other day, I happened to notice the following advertisement:

> FARMERS' BOYS, STOCKMEN,
> FARRIERS, JOCKEYS.
>
> You can become skillful horse and cattle doctors, complete and proficient veterinarians, without losing time from your regular employment, by our system of home study. Our course will enable you to earn large fees as veterinary surgeons, or save large sums by treating your own horses or stock. Horsemen, this system will put money in your pockets. For further information and a valuable book, send 25 cents (postage stamps) to The American Correspondence School of the Arts and Sciences, Chicago. Mention this paper.

I at once enclosed twenty-five cents in postage stamps to the American Correspondence School of the Arts and Sciences, and in due time received a prospectus of its veterinary department, which I have here for your inspection. If you wish one of these interesting documents I have no doubt that more are forthcoming upon receipt of the requisite stamps.

This school, upon the payment of $25.00 by the matriculant, furnishes a lecture a month for home study, and also forward the required text-books upon receiving their price; the books for the first term being: "McFadean's" Anatomy, Gould's Medical Dictionary, Fleming's Veterinary Obstetrics, and Gresswell's Veterinary Pharmacopœia. The course covers two years, but what text-books are needed for the second year the prospectus does not state. Written examinations are held from time to time. The first year's course can be taken independently of the second year's, but the advanced one cannot be taken first, nor any student take both in one year. Club rates are offered three or more students living near each other, if desired. Another advantage which it possesses is that matriculants can enter at any time. The size and number of "large fees" that the certificate-holders of this institution will be enabled to earn as "veterinary surgeons," and the amount of "money that it will put in horsemen's pockets," I leave to your imagination, knowing, as most of you do, the length of time it requires for thoroughly educated veterinarians to build up large and lucrative practices.

This condition of affairs is certainly interesting, and calls for the most careful consideration and investigation upon our part.

If the proposed amendment to the Constitution of this Association be adopted, it will be necessary to add a committee on veterinary schools to the standing committees, whose duty it shall be to keep posted upon all matters pertaining to these institutions, such as the establishment of new colleges, the period of study, requirements for admission and graduation, the number and standing of the members of the faculty, and all similar information; or if it seems wiser to do so the Committee on Intelligence and Education might perform this duty. It should also devolve upon the committee having this work in hand to correspond with the proper officials in foreign countries having charge of the management of their respective veterinary schools, keeping them informed upon the standing of our different veterinary colleges, and securing for each the recognition it deserves.

For example, a graduate of an American veterinary college having a two years' course could formerly enter an English veterinary school and obtain the degree of M.R.C.V.S. in a year, while a graduate of a three years' school here was obliged to do the same. This is obviously unfair to the man who has taken the longer course, and it is a condition of affairs that we should do our share toward remedying; and we should do all in our power toward securing every facility for our young graduate to pursue his studies in any foreign veterinary school that he may desire to enter, with a due recognition of the course of study that he may have followed at home.

If, however, all the veterinary schools in the United States adopted a three years' graded course, with a high standard of matriculation examination, I do not think the ideal will have been reached, for I believe that in time, as this country ecomes richer, and the veterinary profession older and more dvanced, colleges covering a term of four or five years may e established, and many studies of importance that have eretofore been neglected will receive the attention they eserve.

Then such branches as zoology, zootechny, botany, toxiology, bacteriology, hygiene and the like will receive a wider nd more thorough consideration than at present. Hygiene s, I think, a very important matter, the veterinarian at presnt having given but little attention to the construction of tables, ventilation, drainage, the value of fresh air, pure ater, proper clothing, careful grooming, and similar quesions pertaining to the comfort and health of his charges.

Horseshoeing is another subject that does not receive the ttention which it ought to, and instruction should be given n it.

Why could not a series of lessons in horseshoeing be given n some of our veterinary schools for blacksmiths, a certifiate to be given to those who passed in it? If those taking uch instruction could receive a little more for shoeing horses han the ordinary blacksmith it might encourage bright and ntelligent young mechanics to adopt this trade, and thus ive us an improvement upon the extremely ignorant class of en who now follow the business, and also save much equine uffering. I fear, however, that in such an event it might reuce the incomes of some of us! Such a course as I propose o include the anatomy, physiology and pathology of the orse's limbs and foot, together with proper methods of shoeng, both in health and disease.

Sanitary science and police will then receive a greater mount of attention from the veterinarian's point of view, and n time his value in connection with boards of health, the nspection of slaughter-houses, provisions and dairies, will be ore fully realized.

The great obstacle at present to our obtaining from veternary schools more severe matriculation rules, longer period f study, more thorough education, more difficult graduation, s the fact that most of them are private undertakings, where personal and pecuniary interests will sometimes overwhelm the most worthy professional and best-intentioned individual. Not until our leading veterinary institutions have ample endowment funds, either as private bequests or public appropriations, will they be enabled to in any degree approach perfection.

Another means of elevating the profession that deserves our consideration is by means of ethics. I would call your attention to a paper read upon this subject by Dr. A. Liautard, before the Massachusetts Veterinary Association, last May, and published in the *American Veterinary Review* for June, in which the writer treats the question in a very able and instructive manner, and which I would call to the notice of all who may be interested in the subject. I will, therefore, dismiss this matter in as few words as possible.

It is not to the ethical behavior of our recent graduates that we would call attention, but to the professional morals of the older members of our calling, more particularly that of instructors in veterinary colleges, to whom the youthful practitioner or student is looking for example, and in whose footsteps he is likely to follow.

It is our teachers who are largely responsible for the ethical feeling of the recent members of the profession, and it is their influence and training which have much to do in deciding the professional morals of the young man, whether he looks upon his calling as one of the "learned professions," and feels the proper *esprit de corps* in its well being when launching upon it as his life work; on the other hand solicits patronage, seeks contract work at low rates, and even goes so far as to claim that the calling of a veterinarian is a business, and not a profession, and that a man to succeed in it in the race for dollars must resort to sharp business tactics in order to get ahead. In speaking of the ethical example set by the instructors in our veterinary schools, I do not refer to veterinarians alone, but would include members of what we sometimes style our "sister profession," who are upon the teaching force of all these institutions, and in some of them, at least, if not more, take an interest in and encourage proceedings that they would be the first to cry out against, and most loudly denounce, in members of their own profession, evidently considering veterinary so much lower than medicine, that it has no need of any code of ethics at all. Some of these gentlemen certainly have a very curiously perverted moral vision, to say the least, and where it exists it should be corrected.

Last year, in this report, I made some criticism of the Bureau of Animal Industry, and since then I have had no reason for changing my mind, or retracting anything I said at that time, but the chief of the Bureau has taken the matter as a personal attack. I therefore prefer to make no remarks about it on this occasion, as anything that savors of a personal quarrel has no place in a report of this kind.

Another question that has caused a great deal of discussion lately, and one which I would like to call to your notice, hoping that some day it may be satisfactorily settled, is that of actinomycosis. Is actinomycosis an extremely contagious disease of cattle spreading with terrible rapidity among our herds, and readily communicated through the beef and dairy products to man, causing countless deaths among the human family, even though the lesions in the offending bovines are purely local, or is it not?

If these various communicable diseases were half as dangerous as we know they are, it would be a wonder that one of us was alive to tell the tale. Meantime, judging from what we see of the two diseases, both in man and cattle, I believe that tuberculosis is vastly more dangerous than actinomycosis, and that it is our duty as sanitarians to do all in our power to abate its ravages, both among our herds and in our own race, and while we should neglect neither malady, tuberculosis is much more urgent and demands our immediate attention.

Another matter which always interests us at these meetings is the establishment of our United States Army Veterinary Corps. We have, as usual, a special committee to inform us upon the subject, and I hope its report may be more encouraging than in the past.

In conclusion, gentlemen, I wish to thank my colleagues upon this committee for the able assistance they have rendered me; and I also wish to take this opportunity of expressing my obligations to my friend and preceptor, Dr. Liautard, for the kindly and useful advice and information he has given me, and to which this report is greatly indebted for much of the value it may have.

Next year we shall have a grand international veterinary congress in Chicago, at the time of the nation's celebration of the four hundredth anniversary of the discovery of America by Christopher Columbus. What is a more fitting sentence for me to close with than the words of the immortal Lincoln? Let us meet there, "With malice toward none, with charity for all, with firmness in the right, as God gives us to see the right; let us strive on to finish the work we are in."

NOTES ON CERTAIN ABNORMALITIES IN ANIMALS.

By D. S. Kellicott, Columbus, O.

From time to time abnormalities have been observed in animals dissected in the zoological laboratory of the Ohio State University. During the last academic year several of unusual interest occurred, and the three briefly described below, it is thought, may have sufficient value to warrant record in a technical journal.

I. The first case that I will mention was one of arrested sexual development in a sheep, giving a malformed animal, sometimes called a "hermaphrodite." In February, Mr. H. E. Rutan of Mechanicsburg, O., informed me that in his flock was a sheep which he thought was a ewe, but that it did not act like one. He kindly granted a request for the privilege of studying it, and the results were as follows:

The sheep was about a year old, weighed one hundred pounds, appeared to be in perfect health, and had in general the appearance of a ewe. There was no scrotum, but the homologue, the *labia majora* were well developed, normal in position and externally covered with short hair. The testicles could be felt in the inguinal region. On removing the skin a slender muscle was found lying along the *linea alba*, from the perineal region to the umbilicus, where it bifurcated, the two parts running forward to be attached to the fascia of the pectoral muscles. The muscle appears to represent the retractor and protractor muscles of ruminants. The two slit-like inguinal openings, situated cephalad of Poupart's ligament, were about two inches long and through the posterior part of which hung the testicles; these had long cremaster muscles, were relatively well supplied with blood, and were normal except in size. The mammary arteries accompanied these muscles through the inguinal openings, and were distributed in the substance of the small mammary glands.

The urinary bladder appeared normal, but the urethra did not traverse a penis, being in this respect like that of the female. Its external opening was situated at the upper angle of the vulva, and the entire canal was only three inches in length. The urethra was in the position of the vagina of the female and surrounded at its middle by a well developed *musculus accelerator urinæ*.

On the dorsal aspect of the bladder, the seminal vesicles were found, each about two and one-half inches in length, and one-fifth inch in diameter; each was in communication with its corresponding testicle by a well developed *vas deferens*. The prostate gland was present bound to the wall of the urethra.

Microscopical examination was made, but it failed to reveal spermatozoa in the seminal vesicles.

The most profound malformation occurred in the penis. Immediately below, not surrounding, the urethra was the *corpus spongiosum;* it ended in a *glans* which projected about half an inch from the vulva, appearing like a *clitoris*. (Since the organ was not traversed by the urethra, it might properly be called a *clitoris*, but as the primary sexual characters were distinctly those of a male, I will call it *glans penis*). The total length of the *corpus spongiosum* was, perhaps, five inches, but as it was folded several times it appeared much shorter. Its origin was difficult to make out, but appeared to connect with the accelerator urinæ. Two very small erector muscles attached the *C. spongiosum* to the tuberosities of the ischia. On either side of the *C. spongiosum* was a shapeless mass, the structure of which seemed to indicate the *corpus cavernosum*. Externally below the *glans*, there was a transverse fold, or partition of mucous membrane forming a sac open above. The fold was laterally attached to the *labia majora*, and really appeared to represent the *preputium*.

No trace of ovaries or uterus was found, so it seems safe to conclude that the essential sexual regions were male and the external female.

NOTE.—The dissections were made by the Class in Comparative Anatomy; the notes were made by Mr. J. H. McGregor.

II. A case of extra uterine pregnancy in a cat. The animal was of normal size, apparently in good health and exhibited the usual cheerfulness. The cyst was found on opening the abdominal cavity lying free in the caudal part on the left side. It was somewhat uniform, its dimensions were ¾x1x2 inches, and contained two kittens; the color was dark livid and the whole was inclosed by a delicate, hyaline membrane.

The ovaries and the right horn of the uterus were normal in appearance; the left horn was greatly reduced, appearing as a slender filament only. This seems to indicate that the fœtuses escaped by rupture, and that subsequent occulation and atrophy had taken place. No trace of extra-uterine placentation was to be found.

As said above the whole mass was enveloped by a thin membrane; this was continuous with a firm fibrous portion lying in the concave edge of the cyst. On removing the embryos they were found separately enveloped by a firm membrane—the amnion. Between this and the outer membrane the flesh-colored substance which apparently represented the ringed placentæ was of variable thickness conforming more or less to the outline of the enclosed fœtuses; its substance had a marked columnar structure suggesting the villi. A large number of crystals, probably cholesterin, were found mingled with this substance.

The fœtuses were distinctly mummified and much distorted. Their skulls were compressed and the cranial bones pushed by one another at their edges. From the condition of the uterine horn, as well as that of the fœtuses, it may be inferred that the accident happened a considerable time before the cat was killed. There is no evidence to show at what stage of gestation it occurred, nor whether they had or had not been extraneous placentation, nor how the two happened to be wrapped so closely in a common envelope. Among the many cats dissected annually this is the first instance of abnormal pregnancy observed.

III. The third case that I would mention is that of a garter-snake, *Eutania sirtalis* in which some of the eggs had developed in the body cavity. More than once dissection of this snake in the spring has revealed young yet in the egg membrane in the oviducts, dead and mummified, which were evidently the product of a previous year. In May last one was found with such wrecks in the body cavity outside the ducts, whilst the ducts were not ruptured as was proven by inflation.

As is generally known, the eggs of this species develop and hatch in the oviducts, and accidents which might easily account for their death before extrusion are easily imagined; harmless mother snakes are so often ruthlessly trodden under feet of men and boys that the young still in the egg envelops may be killed. But how about those found outside the ducts? Were the eggs fertilized before reaching the ducts, and then by some accident failed to enter the same, or were they fertilized in the ducts and by accident forced back into the body cavity? Just where the ophidian eggs are fertilized seems to be in doubt?

FRACTURES.

By Dr. Pierce, Oakland, Cal.

(A paper read before the California State Veterinary Medical Association).

Not knowing what other subject to present to you this evening, I have concluded to give you a report of several cases of fractures that have occurred in my practice of late. It tends to show to what extent nature will repair damage with a little assistance from man, and that we should not be too hasty in advising the destruction of a poor dumb brute.

CASE I.—On the 20th of March last I was called in great haste to the race track to see a horse that the trainer said had gotten hurt in his stall. Upon arrival I found a most beautiful three-year-old chestnut stallion, a grandson of Direct, standing in one corner of his box with the blood dripping from his mouth.

On examination I found a compound comminuted fracture of the inferior maxilla, beginning between the front and lateral incisors on the left, extending in an oblique direction to the first molar on the right, making a three-cornered piece, and taking with it four incisors. The piece was held by the skin in such a manner that the table surface of the teeth looked forward, and the fractured portion kept piercing the roof of the mouth.

I ordered the animal brought directly to the hospital where we placed him on the operating table, and proceeded to get the parts in apposition. I found it impossible to do so at first on account of the ragged edges, but by removing some of the irregularities with the bone forceps I had no difficulty, and with silver wire made fast the teeth on the broken piece to the solid molars on the opposite side. Then by placing splints under the jaw, and bandaging around through the mouth, I made it quite solid.

The next question was, "How is the horse going to eat all this time?" it being impossible for him to take up a mouthful of food or masticate it after he once had it in his mouth. By boiling oatmeal (having it rather thick), and placing it well back in his mouth with a wooden spoon he managed to get it down, and enough to satisfy him fairly well.

We removed the bandage every day, carefully washing out the wound with an antiseptic, and always keeping a muzzle on except when feeding him or dressing the wound.

In twelve days we could see signs of reunion beginning to take place and in just thirty-one days he went back to the track, weighing at least one hundred pounds more than when he came to the hospital. Apparently, he was all right except that the piece which was broken was a trifle lower than the rest of the jaw, but to a casual observer it is not noticeable at all, and he has been worked ever since.

CASE II.—On the afternoon of May 6th I was called to one of the largest stables in our city to see a horse that had become lame while being driven that afternoon.

From a history of the case I learned that a very responsible party had been driving the horse, and in crossing the street car track he very suddenly became lame. The driver got out, supposing it to be nothing more than a rock in the foot or that he had picked up a nail, but finding nothing of the kind, got back into the buggy and the horse went off on three legs. Not being far from the stable the driver managed to get him home. When I arrived I found a large sorrel gelding fourteen years old, holding up his right front foot. Upon examinatian I found a longitudinal fracture of the os suffraginis. We placed the animal in slings and had the parts fomented with hot water for an hour or more three times a day and applied anodyne liniments for three days. When the swelling was somewhat reduced, we applied splints and a plaster of paris cast. We left him in the slings six weeks, and when we took him out he threw considerable weight on the fractured leg. We then let him run in a pad dock continuously, where he improved very fast. He has now almost entirely recovered, there being still a slight enlargement of the fetlock joint.

CASE III.—On July 13th I was called to see a colt that the man said had become hurt in some way during the night, and was very lame. Upon arrival I found a bay colt four months old. When he tried to move he would drag his off hind leg, apparently having no control over it whatever. I examined it and found an oblique fracture of the shaft of the femur.

We placed the little fellow in a cart that chanced to be at hand, and brought him to the hospital, where we rigged up a set of small slings; placing them under him, and fixing it so there could be no weight thrown on the fractured limb, by making a hole in the floor under the foot, arranging it so it was impossible for him to get into it with any of the other feet. Having of course to depend upon the large muscles of the region to keep the two ends in apposition, as it is impossible to bandage in that locality. We left him in the slings three weeks, and when we took him out, to our great surprise, he walked quite readily across the floor. He improved so rapidly, that in five weeks from the time he came to the hospital he walked home, easily, a distance of three miles.

Hoping this may lead to a good discussion, I will close by saying, never order an animal with a broken leg destroyed, if there is any chance of recovery.

SCLEROSTOMA TETRACANTHUM.

By G. L. Buffington, D.V.M., Mt. Pleasant, Iowa.

(A paper read before the Iowa State Veterinary Medical Association.)

In presenting this paper to the Association I do not wish to convey the idea that I am a specialist in this line of work or that I have made any special scientific investigation of the parasite under consideration. I simply present the subject from a clinical standpoint, as observed in my practice, referring when necessary to some of the standard authors. The literature on this subject being so meagre, the loss occasioned by the parasite so great, it behooves those who have observed its ravages to draw attention to the facts and thus elicit a discussion which may prove of benefit to the profession. It is with this intention I present this paper for your consideration.

For the minute anatomy I am indebted to "Neumann's Parasites and Parasitic Diseases of Domestic Animals."

Description.—The Sclerostoma Tetracanthum is one of the very small nematodes inhabitating the intestines of the horse. The body is slightly tapering anteriorly, of a reddish brown color when preserved in alcohol, but while in the intestinal canal of the host the larger ones are of a bright red and the smaller ones a dirty white color. They are from one-fourth to three-fourths of an inch long, the females being a little larger than the males. The mouth is circular, with a salient rim that has a crown of triangular teeth, and outwardly six papillæ, two lateral, small, and on each side of them two others, conical and very prominent. The buccal capsule is cylindrical. The caudal pouch of the male is simply excised on the ventral surface.

The posterior lines are trifurcated, the middle doubled and the anterior cleft. In the female the tail terminates in a point and the vulva is very near the anus. The digestive canal is complete.

The sclerostoma tetracanthum inhabits the cæcum and colon of the horse often in company with the strongylus armatus, another troublesome equine parasite and one which formed the subject of an interesting and valuable paper at the last session of the United States Veterinary Medical Association, by Dr. J. F. Winchester.

ROUND OF LIFE.—The ova are segmented in the uterus. They are laid in the intestine of the host, passed out with the fæces, and if the proper conditions, warmth and moisture, are met with, will hatch out in a few days. The external phases in their development are, according to Bailliet, analogous to those of the strongylus armatus and are about as follows: If the conditions of warmth and moisture continue favorable after the ova are hatched out, they gradually grow, their integument becomes folded and forms a kind of sheath in which the worm moults. It is at this period they enter the body of the host in the water the animal drinks, or perhaps on the green forage when on low, damp ground, pass into the intestines, and it is probable that they encyst themselves directly into the mucous membrane of the colon and cæcum without penetrating the circulatory apparatus. At least no wandering parasites of this kind have ever been observed. They remain imbedded beneath the mucous membrane until they attain sexual maturity, when they again enter the intestinal canal to pass the remainder of their lives.

EFFECT ON THE HOST.—As the result of the association of two organisms with more or less constancy, various modifications of form and function must occur. In some of the lower forms of animal life, where the host is but little higher than the parasite which infests it, the latter sometimes has a mechanical transforming effect on the host without seriously interfering with its function. In the higher animal, however, the effects on the host are more serious and more markedly pathological.

Leuckart distinguishes pathological effects as due either to growth and increase of parasites, to their wanderings within the body or to the very considerable loss of nourishment which a number of parasites of appreciable size necessarily entails. The mechanical effects also are often of a serious nature. Thus parasitic worms by their size or number sometimes close up passages, as blood vessels or the bronchial tubes, often causing fatal results.

According to the old hypothesis, the pathological state of the host was not the result of the parasite, but was the cause, and in fact created them. And in spite of the gradual unravelling of the mysteries of origin and life-history, medical men clung conservatively to the old hypothesis of spontaneous generating. The ingenious experiments of Pasteur have, however, prevailed against all refractory opposition, and peremptorily established the fact that spontaneous generation could not be invoked even for the infinitely small parasites or microbes. So it is not until within the last fifty years, that with the rise of experimental helminthology, medical science shook itself free from superstition and ignorance and devoted close attention to etiology and treatment, culminating in that systematic warfare against all forms of parasitism which now occupies so important a place in medical and veterinary science.

During the winter of '91-'92 my attention was for the first time directed to the serious nature of parasitism and the unwonted loss some of these small animal organisms may cause. No other one disease has caused so much loss, during the past year, among colts in the country in which I reside, as that caused by intestinal parasites, and that mostly by the sclerostoma tetracanthum, though the large, round worms (acaris megalocephala) have usually been associated with them, as also the armed sclerostoma in some cases. In order to convey to you some conception of the pathological effects of this parasite on the host I will cite some cases that have come under my observation. To one in particular I will refer in detail, as it was under my direct care for three months, and I had a good opportunity of observing the cause of the disease.

CASE I.—In the early part of December, 1891, an eighteen-months-old filly was brought to my hospital for treatment. The filly presented an extremely emaciated condition, as though suffering from some exhausting disease. The hair was long, rough and staring; left side of the back covered with scabs, legs swollen, more especially at hocks, which presented great baggy enlargements, mucous membranes pallid, pulse about normal and temperature a little below normal. There was a constant rumbling of bowels. Not being satisfied as to the cause of the extreme emaciation, she was placed in a box-stall to note any further symptoms which might be presented. It was soon observed a mild form of diarrhœa was present and the fæces were very fœtid. The appetite was ravenous and she would drink about as much water as two ordinary work-horses at hard work. When down, was unable to rise without assistance though she would struggle to do so. When ssisted to her feet would stand around quietly and eat most of the time. Appeared to suffer none, but was just weak and ifeless. On examining the fæces, a number of bright red worms from three to five-eighths of an inch long were found on the surface of them. Every passage contained them, and hey were always found on the surface, never within the contents.

The filly continued to grow weaker for four or five days, when on attempting to raise her one evening, we were unable o do so on account of her perfectly helpless condition. After ying all night and struggling most of the time she could not ven raise her head from the ground on the following morning, and her case seemed almost hopeless. However, with he assistance of a sling and two or three men we finally succeeded in getting her up, and after being supported for a short time was able to stand without much assistance. She seemed to do well enough when kept on her feet, but when allowed to lie down would lie quietly for only an hour or two and then begin to struggle to rise, often injuring herself in the struggles. For this reason she was kept up by the use of the sling most of the time. To expel the worms, which were now regarded as the source of all her trouble, finely pulverized iron sulph. was used for a few days in the ground feed and this followed by an aloetic purge. After purgation began the watery fæces were literally filled with these small worms, most of them of a dirty white color, with some, the largest, a bright red, and various gradations between these two. On close examination, while still warm, they looked to be a moving, writhing mass of living organism; there being thousands of them in a small quantity collected on a shovel; and as they continued to be expelled in this manner for thirty-six hours, it would be impossible to even make an estimate of the vast number that existed in the intestines of this filly. The greater number of these worms were about one-fourth of an inch in length. The bright red ones, which seemed to be the same kind more fully developed, would average about one-half inch in length.

Two or three weeks after the first aloetic purge another was given with about the same results, with the addition of expelling a few of the large, round worms. The filly improved very slowly and could not rise without assistance for two months.

During all the time this case was under my observation her appetite was ravenous, thirst great, coat rough and staring and emaciation extreme, improving, however, a little during the last three or four weeks. Diarrhœa was present most of the time and the fæces were very fœtid. Occasionally the bowels would be normal for a few days and then diarrhœa would supervene, this condition gradually improving until the bowels finally became normal. She continued all the time to pass those red worms on the surface of the fæces. This animal received, besides the vermifuges, vegetable tonics and an abundance of good, nutritious food. The last month powd. nux vomica only was used, given in the feed. At the end of three months she was taken home, well fed, including a bucket of milk every day which she greedily drank, and after being turned to pasture in the spring soon fattened up and did remarkably well, and now at two and a half years of age weighs nearly twelve hundred pounds. I might add that during the last few weeks, since the beginning of cold weather, she shows symptoms of springhalt. Two or three other colts on the same farm were affected with the same kind of worms, but not so badly.

CASE II.—During the early part of last January was called to see a herd of twelve colts, consisting of yearlings and two-year-olds. They had not been thriving the previous summer and fall, and had been gradually losing flesh, but no particular attention was paid to them until at this time, when they began to be so reduced as to be unable to stand. One had died four or five weeks previous to my visit. Three were down, unable to rise, and pitiable looking objects indeed. Five or six more were greatly emaciated, but could still get around. The remaining two or three appeared ively and well, but were also much reduced in flesh. The three that were down presented about the same symptons as case No. 1. The worst one died a few days later, and at the post mortem, several days after death, I found the whole mucous surface of the colon and cæcum was literally lined with these small worms, sclerostoma tetracanthum. They were very loosely attached by anterior extremity to the mucous membrane. The attachment was, however, very loose, as they could easily be brushed off. I did not find any encysted beneath or within the mucous membrane. They had probably, previous to death of host, all become sexually mature, and passed into the intestinal canal. A portion of the small intesines, five or six feet in length, was filled with the large, round worms (acaris megalocephala). There were two or three hundred of them, and were all matted together, completely filling the canal. They measured from four to twelve inches n length. This colt, though a small one, had, besides harbor-ing all these worms, been infested with great numbers of lice, previous to death. The other two which were found unable to rise were helped up every morning and well cared for, but, after lingering along several weeks, finally died. The post mortem revealed about the same condition as the first one, except there were only a few of the large, round worms, and in addition a number of white worms, from one-half to two inches long, were found imbedded beneath the parietal layer of the peritoneum. These proved to be the strongylus armatus. These might have existed in the first one and escaped my notice, as I did not look especially for them. Another one of the colts, being very weak, in some manner fell and rolled down an embankment, from the effects of which it died. Post mortem revealed about the same condition as last two. Also found portion of the colon filled with blood clot, probably the result of the fall. The remainder of the herd, with good care, succeeded in getting through the winter, and began to gain as soon as turned to grass. They all received, as medicinal treatment, iron sulph. followed by an aloetic purge, and then the iron sulph. combined with vegetable tonics.

CASE III.—My attention was called to another herd, consisting of ten weanling and one or two yearling colts, which were not thriving, although they received the best of care, being well bred, some of them standard bred. On examining fæces, found they contained the small, red worms. They showed no symptoms of diarrhœa, and were not yet extremely emaciated. They were also affected with lice. The worms were eliminated by the same treatment given the others, and they all recovered. There were many older horses on the same farm, all of which remained free from the parasites.

Numerous other cases of a similar nature were reported from various localities within the county. Although I did not see them all, I was led to believe they were from the same cause.

Dr. G. W. Butler, of Ohio, in *Journal of Comparative Medicine and Veterinary Archives*, Vol. XI, No. 9, also in AMERICAN VETERINARY REVIEW, Vol. XIV, No. 6, refers to this parasite (sclerostoma tetracanthum) occurring as a coincidence in some horses affected with rabies. On post mortem, he found a great number imbedded in the mucous membrane of the colon and cæcum, as well as a large number free in the intestinal canal. He also, in the same article, quotes a letter received of Dr. T. S. Butler, then of Iowa, in which he refers to the same parasite as existing in a number of horses, one of which, a four-year-old mare, died from their effects, and on post mortem he also found a vast number infesting the mucous membrane, and a careful estimate indicated that there were not less than seventy-five thousand of these parasites infesting the large intestine of this animal, and this notwithstanding that the animal had passed in the fæces, during the two weeks preceding death, an equally large number. In the intestines were also found many of the large, white worms mentioned by Prof. Williams, and measuring from one to two inches in length. Williams also mentions this worm as existing in the mucous membrane. In the same subjects he found others in the intestinal canal, which were from two or three inches long, and he was of the opinion that these were of a different variety. There were none of the white worms found in the intestines of any of those cases examined by me, and, as stated before, I found no worms of any kind encysted in the mucous membrane of the colon or cæcum.

From some experiments performed by Dr. T. S. Butler with these small, red worms, mentioned in the letter referred to above, he succeeded in growing them to double their original length, during which time they lost the red color and became much like the white worms which he found. As the result of this, he was led to believe that probably the white worm was only an advanced stage of the small, red worm.

Colts seem to be more susceptible to the attacks of these worms than older horses. This, perhaps, is due to the fact hat the intestinal walls are more delicate and consequently offer less resistance to the burrowing of the parasite in the irst stage of its development. In only two instances have I observed these worms in adult horses in any great numbers.

In these two cases there was no emaciation; the only symptoms being those of acute diarrhœa which soon terminated in recovery.

PREVENTION.—Though we may not yet know the precise life-history and mode of introduction of these parasites, yet we are not altogether at the mercy of their invasion. The ova, it is pretty certainly determined, are derived from without, in all probabilities from the water supply or from fórage when obtained an low, damp ground. It is evident, then, if a vigorous quarantine can be kept over these supplies, we can expect to keep animals reasonably free from invasion. But as this requires continual patient care, and on many farms difficult to control, it is generally neglected in practice, and the necessity for it comes into notice only after losses have been endured.

The parasite does not always come, however, as the result of faulty hygienic surroundings, as animals may be infested when running in good pasture and drinking from a stream of running water. And yet, after one attack under such circumstances, it would be advisable to remove the animals to a higher or better-drained pasture, and furnish the water supply from a deep well which receives no surface drainage. Iron sulph. mixed with the salt, and given once or twice a week, would prove beneficial in warding off the parasite. . If an attack is imminent, the iron should be given more frequently, mixed with ground feed.

TREATMENT.—The indications in the treatment of this form of parasitism is to cause expulsion of the parasite and maintain the strength of the patient by tonics or stimulants, if the animal is greatly debilitated.

Various and numerous are the therapeutical agents used as vermifuges. Arsenious acid, tartar emetic, santonine, male shield fern, empyreumatic oil, have all been used with more or less success. Turpentine is highly lauded by some authorities as an efficient agent in expelling these worms. The treatment proving most satisfactory to me has been iron sulph., given for two or three days in ground feed, and this followed by a dose of aloes sufficient to cause mild purgation, the dose of course depending on the age and condition of the animal; this again followed by the iron and vegetable tonics, where debility is great. Good, nutritious food in abundanca and pure water are essential, as is also shelter from the extreme cold. After an animal becomes so much emaciated as to be unable to stand, only the most careful nursing will insure recovery.

The geographical distribution of this parasite is not yet known, as so little has been written upon the subject. I am informed by Dr. C. W. Stiles, of the Bureau of Animal Industry, after sending him some specimens of the worms found in Case I, which he pronounced as given above (sclerostoma tetracanthum), that the Bureau has had quite a number of cases of them reported from Minnesota and Illinois. To what extent they exist in Iowa I shall hope to determine from the discussion of this paper.

REPORT OF THE PUBLICATION COMMITTEE.

By W. Horace Hoskins, Chairman.

(Read at the United States Veterinary Medical Association.)

As Chairman of your Publication Committee in offering you this brief report, it comes with an apology that you have not enjoyed the past year a complete reprint of our proceedings at Washington, as you did of the one at Chicago. The unfortunate condition in which you left matters at Washington, though appealed to leave the whole matter of this work in the hands of your Committee, which went unheeded, ended just as might be expected—in untold chaos, unending dissatisfaction—and from that time to this there never has been at any one time in your Committee's hands the entire list of papers, reports, etc. that were read and considered there. Until some three months ago I was only able to get together the large part of this matter, and a publisher's estimate of the cost at that late day of about $250.00 for five hundred copies seemed an unwise expenditure at this time. On the various pretexts and claims, one paper and another were taken away, or failed to be placed in my keeping so that only a part of our proceedings have ever been published.

For your and our good I beg of you to clothe your Publication Committee with such control of all your proceedings (which become your property the moment they are offered for consideration before your meetings) that all corrections and changes may be made from proof copies, if demanded by the writer, and in this way you can be assured of a complete and prompt issue of your journal of proceedings. I would suggest for your consideration the wisdom of combining this and last year's report under one cover, together with a complete list of all the officers and members since your organization. Allow this only to members and applicants, to all others desiring a copy at the exact cost for printing.

We issued one year ago one thousand programmes for our meeting, for the present gathering some seventeen hundred and fifty were printed, and of this number sixteen hundred have been sent out through the mail.

Some five hundred lists of officers and committees were issued after our Washington meeting, and on January 1st of this year five hundred copies of our lists of officers, committees and members were printed for our use. A copy of each one of these was sent to each member.

During the year I purchased two hundred and fifty copies of the October and November issues of *The Comparative Journal.* To each member not a *Journal* subscriber I sent an October number which contained the stenographer's report. The others were judiciously distributed and have brought us a rich return in new applicants and a revived interest in our society.

Some three hundred and fifty copies of the list of applicants have been issued, and though they were only placed in the printer's hands on the 15th, I have found opportunities of sending out nearly one hundred, particularly to those who did not expect to be with us, that they might scrutinize the list and forward any objections that they deemed best for the welfare of our Association. Our one thousand application blanks are exhausted and will require renewing after this meeting. They might be changed to advantage by printing thereon our rules and by-laws relating to the qualifications of applicants.

The list of veterinarians which I had compiled one year ago, numbering at that time some thirteen hundred, has now reached about twenty-one hundred, scattered over our entire country and can be carried to about three thousand if time would only permit. Most of these names and addresses have been in some way or another verified during the past year and will be of great service during the coming year in measuring our plans and completing the same for our International meeting. They have been arranged alphabetically and as far as possible their college parent investigated This year it was of great service in aiding the work of Assistant Secretaries by furnishing lists of the members of the profession in their respective States. If our now three hundred and fifty members would resolve themselves into committees of one, we could in less than three months make a complete canvass of the members of the profession throughout our whole country.

The expense of this Committee during the coming year will be extraordinary, and I am not sure but that in view of these and a large increase in every other direction, that it would be wise to so clothe your *Comitia Minora* with power to devise ways and means for providing money through our membership to cancel the same. We cannot afford in view of the international character of our next meeting, to limit or restrict the great good it promises for our profession, on the grounds of lack of pecuniary means. With some seven hundred and fifty dollars in the Treasury and a careful estimate of our income during the year we will have about two thousand dollars at our disposal.

It became necessary to procure an issue of our certificates during the year, and I procured two hundred copies, which at the rate new applicants are seeking admission will only last another year.

Many minor matters were placed in print during the past year and some mimeograph work was utilized, all tending to increase our usefulness and promote the welfare of our organization.

EXTRACTS FROM GERMAN PERIODICALS.

By R. Middleton, D.V.S., Philadelphia, Pa.

DIABETES AND FATTY LIVER IN CANIDAE.

An excessively corpulent dog had been for three days apparantly unwell and inactive; from the examination no symptom was discovered which could not be attributed to the obesity. Five months later the same animal was returned, but in a decidedly thinner condition, which despite a continuously good appetite continued to diminish in gross weight. Thirst increased so that at this time, the relatively insignificant patient was consuming from one to one and a half liters of water per night. The act of urination was indulged in, all but continuously, the volition seeming no factor in the occurrence. Since the last eight weeks imperfect sight has overtaken the subject.

Status Praesens.—Pulse 100, but no alteration in the temperature. In the hypochondriac region the abdomen seemed enlarged, and this directly referable to a hypertrophied liver, which extended forward to the seventh rib, causing dullness on percussion. Cataract in each eye, but in the posterior chamber of the organ no change in the refracting media.

The animal was immediately destroyed; autopsy offering slight catarrh of the stomach with very well marked general anæmia. The liver of colossal proportions; fatty, but without pathological change.

Encephalon, kidneys and pancreas unaltered. In the bladder a small portion of urine, which yielded abundant saccharine material.

The case was one of diabetes mellitus. Since 1889 Schindelka has seen but three cases of diabetes mellitus, and two diabetes insipidus.—*Œst. Wissenschaft Ztsch. f. V. K.*

DANGER OF INTERNAL APPLICATIONS OF AMMONIA.

During the past year M. records three cases of ammonia poisoning in the horse. These patients required the administration of some irritating medicine. The first horse suffered from colic, and died of stomachic rupture; autopsy displayed the lining membrane, and that of the pharynx to have been cauterized by the destructive action of the medicament.

A second animal that had received the same treatment, and which was suffering from indigestion, perished on the twelfth day under the appearance of intense pain.

M. attributes the fatal pneumonia in this case to be the sequelæ of the entrance of the ammonia into the trachea. The general opinion of the conference at which these cases were reiterated, is that aq. ammonia is of questionable aid as an internal remedy in our domestic animals.—*Berl. T. Wochenschrift.*

LOCALIZATION OF HYDROPHOBIA VIRUS.

In several fatal cases of rabies, Wissokowicz experimented with the liquor cerebro-spinalis in regard to its virulence. In each case the result has been negative; on the eontrary, every case in which the emulsion of the spinal cord had been inoculated, the animals used in the tests—rabbits—succumbed with symptoms of typical hydrophobia.

The author considers this very tangible evidence that rabies is dependent upon a micro-organism which requires for its propagation conditions and material to be found only along the track of the nerves and in nerve cells.

This, moreover, further elucidates why, in numerous instances, subcutaneous or intravenous injections of preparations of the virus have not induced hydrophobia.—*Centr. fur Bacteriol. u. Parasit. Bct. ix.*

PERFORATION OF THE POSTERIOR VENA CAVA.

The post mortem of a seven-year-old Holland cow that became suddenly ill under symptoms of dyspnœa, and was slaughtered in order that the meat remain eatable, disclosed the following lesions:

In the right lobe of the liver, directly in that locality upon which the vena cava posterior traces its course, an immense abscess cavity, seven inches in length by three in width; this cavity contained a quantity of inspissated pus. The walls, except that portion adjacent to, and immediately beneath the anterior border of the liver, consisted of a white connective tissue coating, varying in thickness from $\frac{1}{3}$ to $\frac{2}{3}$ of an inch; the component fibers of the latter entered the parenchyma of the organ, extending in an arboreal network. The interior was of a healthy pink color.

An irregular opening more than one-half inch in length, formed the means of communication between the abscess cavity and the lumen of the vena cava.

The sides of the opening were, upon that portion corresponding to the abscess, smooth and rounded; while that portion, formerly the wall of the vein, was irregular and in shreds. Anterior to the rupture jnst described, a portion of the tunica intima of the vena cava, about the size of a quarter dollar, had become loose and formed a pocket, opening backward. The free edge of this valve, as it may be called, was occupied by growths the size of a pin-head, and resembling warts in general appearance. The remaining portion of the vessel's inner coat, adjacent to the foramen, was intensely reddened.

The development of those lesions has occured, in my opinion in the following manner: The primary cause was undoubtedly the abscess; how this originated is impossible to say, though some may advance the theory of an echinococcus, yet no trace of a cyst wall could be detected, and no lesion of this nature could be located in the remaining organs of the cadaver.

From the texture and thickness of the walls of this growth, it is safe to presume that the same had taken a long time to reach its present dimensions. This inflammatory action within the growth very likely extended to the serous membrane covering it, and from there to the vena cava, causing adhesion between the liver capsule and vein; by this hermetic union, the external coat of the latter vessel was obliterated. The suppurative contents now came in contact with the tunica intima, producing thereupon a certain amount of irritation not unlike an ordinary foreign body, with congestion and maceration at this point.

As a consequential result there followed an inflammatory process, which weakened the now thin separating wall, and permitted an intermingling of contents so sudden and violent in intensity, as to tear the internal coat of the vein, producing the valve-like flat previously spoken of.

Had the rupture and interchange been less rapid, there would have been formed thrombi, which could obviously have caused some manifestation of ill health.

This is the only case of this nature to be found in our literature, and for this reason we have been somewhat elaborate in its description.—*Berl. Th. W.*

KERATITIS MACULOSA IN THE HORSE.

A three-year-old mare, brought to the Vienna clinic on account of blindness, came under the care of Prof. Bayer. He found the morphological appearance of the organs normal; complete absence of swollen lids, photophobia, congestion of the conjunctiva and superfluous secretion; both orbs of the same size. At the side of the cornea, adjacent to the inner canthus of the left eye, a superficial cloudiness could be detected about three mm. in width.

By focal illumination this resolved itself into a number of minute points entirely independent and distinct from each other. They were in the most external strata of the cornea, and also in the subepithelial layer. The contour of the transparent coat at this point was irregular, as shown by the ophthalmoscope. Injection or hyperæmia of the sclerotic not present.

Prof. Bayer had first heard of such a corneal disease under the head of "Keratitis Maculosa" in the *Vienna Weekly Clinic* of 1889; this was described by Prof. von Reuss, and had occurred in a man at the Vienna hospital. Reuss was invited to examine this horse, and gave it as his opinion that the lesions present were precisely the same as in his own patient. The same disease was again seen in Bayer's clinic a short while after. In this instance nothing abnormal was noticed on the remaining portion of the bulb, the alterations being confined exclusively to the cornea. The opaque collection increased in dimensions in a week, and at the periphery of the transparent coat fine bright stripes appeared and vanished. At the termination of the third week the whiteness on the left cornea had increased one mm., while that upon the right had markedly receded. In one month after the first observation, the right cornea was clear and the left nearly so.

Prof. Bayer has had an opportunity to record three other cases which, he states, manifested the same course and termination. Each of these animals had been brought to the clinic for some disease other than that of the eye, and it was only by accident that the students discovered anything unusual in the organ. One of the patients served as material for a post-mortem. This subject when seen intra-vitam exhibited numerous plane facets in the affected region which were somewhat elevated. The examination of the eyes, undertaken by Croker, exposed a number of round cells in the parenchyma of the cornea; these were scattered in the lamellæ, and as collections occupied the whole thickness of the membrane. Circumscribing the round cells is a ring of purplish stained bodies which might have been micrococci, the cornea being somewhat thicker at the point of invasion. Descement membrane exhibited no alteration. At the termination of the pannus, or collection of sclerotic vessels upon the cornea, were cumulations of round cell which may be alluded to as an invasion of the same. At the limbus corneæ, in the substance of the cornea, masses of decomposed protoplasma; from this point the disease seemed to have propagated itself. —*Mtsch. f. Thierheilk. v. F. and K. III.* 3.

CHRONIC GLANDERS IN MAN.

A nineteen-year-old lad employed as a hostler reported sick under symptoms of an irregular fever, general weakness, intermittent pain in the extermities, chills and nocturnal sweats. Dr. Jakowski's examination determined, besides swelling of the spleen, an enlargement over the upper third of the femur, not painful; upon the calf of the leg a small, deep ulceration with callous circumscribing lips and infiltrated surroundings. The left testicle swollen, and the epididymis painful on pressure. After the lapse of a few days these symptoms decreased, but their demise was marked by the appearance of chills and a pustular affection of the skin. From the contents of the latter the author succeeded in cultivating the staphylococcus. Accompanied by intense pain, there formed in the region of the shoulder an enlargement about one inch square. Trial puncture by the trocar yielded a few drops of a bloody serous fluid which contained the glanders bacillus. Similar infiltrations developed themselves upon the forearm and the upper thigh. The malignant symptoms vanished by the internal application of iodoform. A relapse occurred two or three months later which involved the left testicle and the calf of the leg. Upon the former an aggregation of bluish granulations formed under the skin, which came ultimately to puncture, and then discharged a tenacious, thready suppurative product in which the glanders bacillus was easily discovered. The wound following the extirpation of the testicle healed kindly, and the other symptoms incident to the second and recurrent attack disappeared.—*Ztschr. f. Klin. Med.*

ALUMINIUM SHOES.

Trials at the Berlin military smithy upon aluminium have decided the following interesting points: Pure aluminium may be manipulated when cold, but with more difficulty than iron at a glowing heat. The metal becomes more dense and harder from even light blows; through the operation of grooving and piercing, the form of the shoe is destroyed, necessitating re-hammering into shape. By ordinary use a shoeing lasts about three weeks, but the lower external edge may need filing before the shoes are worn out. The softness of the metal, and the consequent rapid loss or wearing of the shoes, makes the asphalt pavement desirable.

Aluminium is three and one-half times lighter than iron, a medium-sized shoe weighing seven ounces. Sufficient of the element to form two shoes costs seventy-five cents, while the same amount of iron costs ten cents. Shoes made of this metal are recommended for track-horses. Aluminium bronze is cheaper, but difficulty is experienced in working the same. Aluminium copper is as heavy as iron.—*Ztschr. f. Vet. K.*

THERAPEUTIC NOTICES.

Ahl states that the antiseptic property of corrosive sublimate solution is increased when the same is of a certain warmth. For instance, a solution of 1:10000 at a temperature of 104° is as effective as a 1:500 at ordinary temperature.—*B. T. W.*

Turazza commends the administration of asafœtida in habitual abortus.—*Much. Med. Woch.*

Abatkoff claims that opium, morphium and codein hinder the digestive process, and should not be given for some time after feeding.—*Dtsch. Med. Woch.*

In the treatment of moist eczema Leven advances the application of a one per cent. argent. nit. solution several times daily.—*Therp. Monat.*

Congis has used the following liniment as a local application in mammitis of the cow:

℞
Liniment Amm., ℥ v,
Camph. Trit., ʒ vi,
M.

Another is given in which the quantity of ammonia is influenced by the intensity of the inflammation:

℞
Ol. Camphorat, ℥ v,
Liq. Amm. Caust., ℥ iij v,
M.

Christmas and Restpant offer a mixture of antiseptic agents, which is in no way injurious to the organism, and at the same time very effective. Its composition is as follows:

℞
Ac. Carbolici, ʒ ij,
Ac. Salicylici, ℈ xv,
Ol. Menth. Pip., gtts. x.,
M.

A half per cent. watery solution of this liquid will destroy the bacteria of diphtheria in thirty seconds; anthrax bacilli are annihilated by a two per cent. solution.

SHORT COMMUNICATIONS.

In the pathological institute of the Berlin veterinary college, Dr. Wallach has discovered leaf-shaped bodies and distoma eggs in the lungs of equidæ. He advances the suggestion, therefore, that the nodular bodies found especially in old horses at death are but the remains, in many instances, of a previous distoma infection.—*Berlin. Wochen.*

Feigel reports the following for the determination of human and animal blood by the agency of bile. When gall is added to pulverized blood, the crystals formed from the human fluid assume the form of lengthened cylinders or columns; those obtained by treating animal blood are angular four and eight-sided prisms.—*Oestor. ungar. Centralb.*

According to Dr. Nattall, every consumptive expectorates from 250,000 to 4,000,000 tubercle bacilli in twenty-four hours. Supposing the number of phthisical patients in Berlin to be 50,000 it is easily comprehensible that the hygienist should be aroused to the menace offered by these 100,000,000,000 microbes daily brought into contact with the outer world. In this calculation the spores, which are still more numerous, are left entirely out of consideration.—*Deutsch. Med. Wochenschr.*

A new stable morphine solution (1:30) is made as follows: Take of morph. hydrochl. ʒj, dissolve in ʒ v of alcohol, ʒ x glycerinum, and water sufficient to make up to ʒ xxx, after to be filtered. It is asserted of this compound that it will remain intact for months.—*Rundsch. f. Pharmac.*

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

Regular meeting of the Massachusetts Veterinary Association held at 19 Boylston Place, Boston, Wednesday evening, October 26th, 1892, at 7.30 o'clock. President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Burr, Hadcock, Howard, Marshall, Osgood, Winchester, Winslow, Parker, LaBaw, Stinson, and the Secretary. Honorary member: Dr. Stickney. Visitors: Messrs. Cronin and Dowd, students at the Harvard Veterinary School.

Records of a regular June meeting, and a special meeting held in September read and accepted.

Unfinished business, none.

Reports of committees: Dr. Winchester reported for the committee appointed to arrange for entertaining the United States Veterinary Medical Association during its meeting in Boston last September. Moved by Dr. Osgood and seconded by Dr. Blackwood that the report be accepted. Carried.

Moved by Dr. Osgood, seconded by Dr. Blackwood, that the surplus from the entertainment fund be paid into the Association's treasury. Carried.

Admission of members: Names of Drs. E. P. McKenna and Wilbert Soule balloted upon. Twelve votes cast for each, all in the affirmative. They were therefore elected.

Application for membership: The application and credentials of W. M. Balmer, M.D.V. (Harv.), were reported favorably upon by the Executive Committee. Dr. Balmer's name is laid on the table for a month under the rules.

New business: Dr. Winchester called the attention of members of the Association to the first annual announcement of the "National Veterinary School" in Washington, many members of the faculty being veterinarians who are either members of the United States Veterinary Medical Association, or connected with the United States Bureau of Animal Industry, or both. He also called the attention of the members of the Association to the new requirements adopted by the United States Veterinary Medical Association at its last meeting in Boston, that hereafter that Association admits to membership only graduates of schools giving a three years' graded course of instruction.

The amendment to the United States Veterinary Medical Association constitution was adopted unanimously, that is, there was not a dissenting vote, and silence gives assent, and yet there were men sitting in the hall who had the announcement of the new school in their pockets, and yet did not say a word. Dr. Winchester thinks it one of the most slanderous affairs ever thrown in the face of our profession, and although it may do no good to say anything, yet silence is acknowledgement, and it is our duty to decry this institution. We ought to act to-night; we ought to show our disapprobation to the proper United States authorities, and we ought also to publicly censure the officials of the Bureau of Animal Industry for their participation in the matter. Dr. Winchester then read the resolutions of the Philadelphia Veterinary Society at its meeting September 27th. These resolutions cover the ground pretty well, but they might have been more emphatic. He also read Dr. Cooper Curtice's open letter to Hon. Jerry Rusk. Dr. Winchester thinks that we, as an Association, ought to make our protest on the same basis as the Philadelphia resolutions and Dr. Curtice's letter. Futhermore, as citizens of the United States, voters, and taxpayers, as well as members of this Association, we have a right to object to public officials using their positions in such a way.

Moved by Dr. Parker that the Chair appoint a committee of three to draw resolutions protesting against the formation of a "national" school with a two years' course, particularly after its founders had placed themselves on record as favoring a three years' graded course of study.

Dr. Peters amends the motion that the committee memorialize Hon. Jerry Rusk, and also draw resolutions censuring the action of the Bureau of Animal Industry, wherein their course is reprehensible as public officials. Seconded by Dr. Winchester. Accepted by Dr. Parker.

Dr. Bryden thinks we ought to memorialize the faculty of this school, and not attack them in an arbitrary way. We ought to do it kindly and harmoniously.

Dr. Howard thinks that other schools have been started with a two years' course, and have had officials of the Bureau of Animal Industry as teachers, and our course must be consistent. Motion then put and carried without a dissenting voice.

Dr. Howard then said that our course must be consistent, and what we send must be something nobody can go behind. He then appointed Drs. Parker, Bryden and Peters on the committee. All refuse to accept.

President Howard then appointed Drs. Parker, Bryden and Winchester as a committee.

Motion then made by Dr. Peters that the committee report at the next meeting. Seconded by Dr. Winslow. Carried.

Reports of cases: Dr. Winslow, of Rockland, has procured a case of springhalt which is now at the Harvard Veterinary Hospital where members can see him. He was to have been brought down town for the members of the Association to see to-night, but he has become incapacitated in some way and could not come.

Dr. Bryden reported having examined him to see if it was worth while to attempt treating him. He says the horse's hocks are deformed; he is old, and his reparative powers are well gone, and he doubts if treatment will do any good, but is willing to try.

Dr. Winslow first saw the animal two weeks ago. He does not show well-marked signs of springhalt when quiet, but if started up suddenly for a little way, then stopped for a moment, and then started again, he shows it in one leg almost as much as the old black horse that the Association killed a year ago last July.

Dr. Howard then read a letter from Mr. T. L. Bolton of Clark University, in which he, among other things, said he was willing to investigate this case as he did the last one.

Dr. Bryden reports a conversation he had with a professor* at the Harvard Medical School. He told the professor that he thought that springhalt was due to a peripheral disturbance, and that they did not agree with him at Clark University. The professor told Dr. Bryden that changes in the spinal cord such as he described were not infrequently met with in various affection in the human, such as elephantiasis, schleroderma, lupus, etc.

Dr. Howard says Dr. Winslow gives the Association this horse; he is our property, and we shall insist that a full report of the investigation of the case first appears in the veterinary journals.

Dr. Bryden says it is not a good case to treat, and Dr. Osgood agrees that it may not be.

Dr. Howard thinks that the foot is not as much contracted as the little black's was.

Motion made by Dr. Winchester that we accept the horse, and are glad to keep him at the Harvard Veterinary School for a while, and that Mr. Bolton be invited to come and experiment with him. Seconded by Dr. Blackwood. Carried.

Motion made by Dr. Osgood that we give Dr. Winslow a vote of thanks for the horse, and credit him on the Association's book with a sum equal to the expense he has gone to in the matter. Seconded by Dr. Winchester. Carried.

Dr. Bryden showed two very large ergots from back of the fetlocks of a grey horse. In his opinion the horn here developed in excess on account of the feet being imperfectly nourished.

Dr. Winchester showed a specimen of aneurism in a branch of the anterior mesenteric artery due to the strongylus armatus. This artery contained a chain of thrombi due to this cause, and free strongyles were formed in the posterior aorta. The animal from which the specimens were obtained was a mare about twenty years old, from which several fast colts have been raised. Dr. Winchester had known her for nine or ten years. Several years ago she was in poor flesh while breeding, and had to be given twelve or sixteen quarts of oats daily to keep her in condition. Her powers of assimilation did not seem to be what they should. Last summer she was at Lowell with a sucking foal. The owner started to take her to Haverhill, but she only went as far as Lawrence when she was taken sick, and was finally destroyed. Principal symptom loss of power in hind legs, also had hæmaturea at first, but recovered from this condition before being killed. The only abnormality other than those already described upon post-mortem was a serous cyst on the outside of one kidney. Dr. Winchester never knew of this mare having colic, but she evidently did have loss of nutrition.

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*The professor's name withheld at Dr. Bryden's request.

Dr. Peters showed a small tumor removed from a horse's breast, which proved to be a dermoid cyst containing hairs and what appeared to be broken down epithelial cells when it was cut open.

Dr. Howard reported a case of scrotal hernia in a gelding. The animal was a bay gelding, six years old, driven every day since his arrival in the city twelve days previously. No history of previous trouble of any kind. On the seventh day the driver thought he was driving a stallion, because of an enlargement noticed by him in the inguinal region. After noticing the swelling, he was driven five miles farther, and upon returning home the animal laid down and was quiet for three hours. At the end of that time slight pain was noticed, and a veterinarian called. He made a diagnosis of hernia, and applied a truss made of a piece of blanket, and a favorable prognosis was given. Dr. Howard was called fifteen hours later, found a swelling the size of a peck basket, constant pain, animal pulseless, vacant stare, temperature 102½. Advised his destruction. Post-mortem showed seven feet of intestine passed through the inguinal ring strangulated.

Dr. LeBaw remembered seeing a case of scrotal hernia in a gelding in New York.

Dr. Osgood once saw a three-year-old colt with a scrotal hernia four months after castration. He threw the colt, reduced the hernia, applied clamps to the scrotum, and the animal made a complete recovery.

Dr. Parker reported a case of pneumo-enteritis in a horse, the urine being so thick and sticky that it could hardly be voided. It shows no albumen, but contains an excess of salts.

Dr. Bryden said that after the outbreak of so-called spinal meningitis in 1873, the urine was in this condition.

Dr. Parker says his case is improving on dilute hydrochloric acid.

Meeting then adjourned.

AUSTIN PETERS, *Sec'y*,

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The tenth Annual Meeting of the Illinois State Veterinary Medical Association was held at the Sherman House, Chicago, Ill., Nov. 16, '92, President S. S. Baker in the Chair.

The roll being called the following members responded to their names: Drs. Walter Allen, A. G. Alverson, A. H. Baker, S. S. Baker, W. A. Baker, Jas. Bond, G. Z. Barnes, H. E. Delavergne, T. J. Gunning, J. A. Judson, O. J. Lanigan, J. T. Nattres, C. A. Pierce, Jno. Scott, J. S. Spangler, R. J. Withers, M. Wilson, R. G. Walker.

The minutes of the previous meeting were read and approved. The President then delivered his annual address.

It was moved by Dr. Barnes, seconded by Dr. Nattres, that the Chair appoint a committee of three to draw up a report of sympathy and condolence on the death of Dr. C. S. Green, of Richmond, Ill., and report at the next session. Motion carried. The Chair appointed as such committee Drs. Alverson, Barnes and Nattres.

The Treasurer's report showed a balance on hand of $40.32. Report of committee on fee bill was deferred till next session. The President then called on Dr. Allen for his paper on "A few things I want to know." Discussion was closed on motion.

J. H. Bates, M.D., of Neponset, Ill., being unavoidably absent, but having sent his paper on "Shall we know each other better," the Secretary was called upon to read it.

Dr. Wilson taking the Chair, Dr. Baker read his paper on "Antiseptic Surgery." Discussion was closed on motion.

The following gentlemen's names were proposed for membership: Dr. J. W. Kaull, Chi. 90, Chicago, Ill.; Dr. J. L. Siegrosser, Chi. 90, Chicago, Ill.; Dr. G. W. Pope, Chi. 89, Dr. J. G. Fish, Chi. 92, Chicago, Ill.; Dr. G. S. Baker, Mont. Chicago, Ill.; Dr. Chas. Spielman, Chi. 88, Chicago, Ill.; Dr. G. W. Browning, N. Y. 92, LincolnIll.

On motion of Dr. Scott, seconded by Dr. Walker, the rules were suspended for the time being and the above named gentlemen elected by acclamation.

Bills to the amount of $22.40 were audited and ordered paid.

The motion to adjourn until next morning at ten o'clock was carried.

Meeting called to order by President Baker.

Committee on Fee Bill reported through its chairman, Dr. Nattres. On motion of Dr. Wilson, seconded by Dr. Alverson, the report of the committee was adopted and the committee discharged.

The Committee on Legislation, reported through its chairman, Dr. Walker. On motion of Dr. Scott, seconded by Dr. Gunning, the report of the committee was adopted and the committee discharged.

The Committee on Membership, through its chairman, Dr. Alverson, reported a number of new members admitted, and new applicants for membership.

On motion of Dr. Scott, seconded by Dr. Gunning the report of the committee was adopted and the committee discharged.

Dr. Hollingsworth, being absent, the Secretary read his paper on the report of two rare cases.

The President then called on Dr. Nattres for his paper on "Azoturia." The usual lengthy discussion on this disease followed, which was closed on motion.

Dr. Walker then read his paper on "Veterinary Legislation," and was followed by J. A. McDonell, M.D., on "Foot and Mouth Disease in Man and Animals."

Dr. W. L. Williams, of Purdue University, of LaFayette, Ind., President of the United States Veterinary Medical Association, was then called upon and spoke regarding the International Congress of Veterinary Surgeons to be held in Chicago in 1893, and was followed by Professors A. H. Baker and R. J. Withers, of the Chicago Veterinary College, on the same subject.

The following gentlemen's names were proposed for membership: Dr. V. E. Frizell, Chi. 92, LaMoille, Ill.; Dr. J. Henderson, Chi. 92, Chicago, Ill.; Dr. J. Fabian Mager, Mont., Chicago, Ill.; Dr. W. S. Brayton, Chi. 87, Blue Island, Ill.

On motion of Dr. Walker, seconded by Dr. Scott, the rules were suspended for the time being, and the above named gentlemen were elected by acclamation.

Election of officers was the next order of business and resulted as follows: President, Dr. S. S. Baker; Vice-President, Dr. Jno. Scott; Secretary, Dr. Wilson; Treasurer, Dr. A. G. Alverson; Board of Censors: Drs. Walker, Gunning and Brayton.

The following standing committees were appointed: Committee on Programme: Dr. S. S. Baker, ex-officio; Dr. M. Wilson, Dr. Stringer, Dr. Nattres, Dr. Ditewig.

Committee on Arrangements: Dr. John Scott, ex-officio, Dr. Frizell, Dr. Story.

Committee on Legislation: Dr. S. S. Baker, Dr. Walker, Dr. Lanigan, Dr. Nattres, Dr. Alverson, Dr. Wilson, Dr. Spielman, Dr. Ryan.

Committee on Membership: Dr. Bond, Dr. Pierce, Dr. Hollingsworth, Dr. Kaull, Dr. Whitmore.

Committee on International Entertainment: Dr. S. S. Baker, Dr. Jno. Scott, Dr. Walker, Dr. Gunning, Dr. Wilson, Dr. Alverson, Dr. Withers, Dr. A. H. Baker, Dr. J. F. Ryan, Dr. Hughes, Dr. Allen, Dr. Hollingsworth, Dr. Nattres, Dr. Pope, Dr. Barnes, Dr. Melvin, Dr. G. W. Pope.

It was moved by Dr. Walker, seconded by Dr. Scott, that the committee have full power to act. Carried.

It was moved by Dr. Scott, seconded by Dr. Walker, that a special assessment of $5 per member be levied for the entertaining of the International Congress. Carried.

It was moved by Dr. Spielman, seconded by Dr. Nattres, that a special assessment of $5 per member be levied for the purpose of legislation. Carried.

It was moved by Dr. Walker, seconded by Dr. Scott, that we have two hundred and fifty copies of the constitution and by-laws printed and distributed to the members. Carried.

It was moved by Dr. Gunning, seconed by Dr. Allen, that a form of certificate of membership of the Association be drafted and presented at the next meeting. Carried.

The Committee on Resolutions of Sympathy and Condolence on the death of C. S. Green, then reported through its chairman, Dr. Alverson. The report was adopted and the committee discharged.

The meeting adjourned to meet in Peoria, Ill., next February, at the call of the Chair.

MATTHEW WILSON, M.R.C.V.S., *Rec. Secy.*

IOWA STATE VETERINARY MEDICAL ASSOCIATION.

FIRST DAY.

The fifth Annual Meeting of the Iowa State Veterinary Medical Asssociation was called to order in the Phoenix club room, at Marshalltown, Iowa, by Dr. F. H. P. Edwards, Vice-President.

Members present, Drs. Edwards, Chatterton, Starkey, H. Shipley, L. N. Shipley, Derwent, Brown, Stalker, Reynolds, Niles, E. E. Sayers, Stewart and Green.

Guests: Drs. H. M. Replogle and J. A. Replogle, of Centerville, E. K. Paine, of Indianola, W. R. Cooper, of Quasqueton, and T. A. Shipley, of Dubuque.

The minutes of the last meeting were read and approved. Drs. Derwent and H. Shipley were appointed a committee to examine the treasurer's accounts.

Drs. Brown, Starkey and Buffington were appointed to fill vacancies in the Board of Censors.

The remainder of the morning hour was taken with verbal reports of interesting cases in practice.

At 1 P. M. the members gathered at the hospital of Dr. Derwent, where several clinical cases of special interest were examined.

AFTERNOON SESSION.

2 P. M. The Association was called to order, Dr. Edwards in the chair. Letters and telegrams received from absent members, expressing regrets for non-attendance were read, also a letter from Dr. W. L. Williams, President of the United States Veterinary Medical Association, inviting this Association to take an active interest in the International Meeting of the United States Veterinary Medical Association, to be held in Chicago next September.

President M. E. Johnson, being unavoidably absent, sent his address, which was read by the Secretary.

Prof. M. Stalker presented the following report for the Committee on Legislation.

GENTLEMEN: Your committee to whom was referred the matter of procuring legislative regulation of veterinary titles in this State, present the following report: The committee met at the Savery House, DesMoines, after the convening of the legislature, and after careful deliberation formulated a bill which in their judgment would meet the wishes of this organization. The bill was introduced in the Senate, and referred to the Committe on Medicine and Surgery. This committee accorded a respectful hearing to your members who had the matter in charge, and the necessity for such legislation was argued in their presence. Some members of your committee met with the Senate committee a number of times to present our cause. After deliberation on the subject, the Senate agreed on some modifications of the bill, and finally reported to the Senate a substitute, embodying such radical changes as in the judgment of your committee rendered the bill worse than useless to the veterinary profession of the State, in the event of such bill becoming a law. All efforts to have the objectionable portions of the amended bill stricken out, failed, and the Senator having the bill in charge was advised to not call up the bill for passage, and it was thus allowed to die.

The point of difference between your committee and the Senate committee, was on the question of granting certificates on the grounds of practice, the Senate committee insisting on providing for a third class certificate to all that class who have been in practice for five years preceding the passage of the act. Your committee objected to this feature of the bill, and preferred to have the bill fail rather than pass with this provision.

A copy of our bill with the amended Senate bill is herewith presented.

M. STALKER.
JNO. E. BROWN.

On motion, a vote of thanks was tendered the committee for the faithful service rendered during the past year, and the committee was continued another year.

The report of Committee on Collective Statistics was then submitted by Dr. Edwards, as follows :

GENTLEMEN : Your committee is sorry to have to report a lack of interest displayed by the members of this Association in this line of research, as the following will prove ; one thousand, seven hundred and seventy-five blanks were sent out to sixty-seven members ; fifty-seven were returned filled out ; these were collected by five members ; of these, thirty-three were collected by one member, leaving a balance of twenty-four for the remaining faithful four to share. In reply to a circular sent out, calling in blanks so that a report could be prepared, nine members out of sixty-seven replied.

We can, however, congratulate ourselves that the few notes received are of great value, inasmuch as they nearly all contain a positive history.

Of the notes received, sixteen were cases of spavin, eleven ringbone, twelve specific ophthalmia, nine kicking and one balkiness.

Of the spavins there were seven males and nine females ; in color there were five blacks, four bays, three greys, two sorrels and one chestnut. In one the history is not given ; in ten the sires and dams were sound ; in three cases other offspring of the same sire were similarly affected; of the dam, one; in the latter case the dam's sire had a spavin, thus making the history of heredity in this case interesting.

The age of development in one case is not given; in one during the fourth month (this animal is now a weanling and spavin is well developed), in one at ten months, one at one year, two at two years, three at four years (the sire of one of these was perfectly sound, but possessed a bad formation of hock; his colts inheredited this formation, and many were known to be spavined in breaking); three developed at five years old, two at six years (one of these had a rather badly formed hock, but stayed sound doing very heavy work till six years old, then threw out a spavin while at pasture; he is now seven years old); one developed it at seven years, and one at eleven years old; this has been repeatedly blistered and fired, but the animal is still lame.

In four cases, breed was not given, eight were grade Normans, two were thoroughbreds, one grade Belgium and one roadster.

Of the eleven ringbones, seven were males and four females; in color four were bays, two each brown, sorrel and iron grey, and one dun; in four, breed is not given; four were grade percherons, one pony, one Hambletonian and one standard bred. In two the age of development is not given; in two, it developed at six years, in one at twenty-five months, and one each at the ages of three, five, nine, eleven, fourteen and sixteen years.

In five cases the sires and dams were sound, in four not known; in one both sire and dam were similarly afflicted; the only case where grandparents could be traced was in the case of standard fillies, and both were free from ringbone. In one case the subject transmitted it to two of her colts.

Of those afflicted with specific ophthalmia, one was a stallion, four were geldings and six were females; in color four were bays, two each greys, sorrels and chestnuts, and one brown; in breed eight were grade Normans, three trotting, and one grade draft. The age of development varied from the ninth month to the eighth year, but seemed most common between the ages of two and four years.

In four cases both sires and dams were sound, in two cases the dams were afflicted and in two cases the sires; in one case both sire and dam were afflicted; in one case each grandam and grandsire were so afflicted. In two cases several other offspring of same sire were similarly afflicted.

The remarks in these cases are very interesting; in the case of the stallion (he is by Henry Gilbert) one of his colts was foaled blind, one other went blind as a yearling, and many others at different ages.

In the case developed at five years old it appears to have skipped one generation and appeared in the next; as the grandsire was afflicted, but the sire and dam were sound.

In the case that developed at six years old, the subject (a female) has raised four colts, the eldest of which went blind at four years old, and the other three have small, sunken eyes. The observer remarks that he thinks they will all go blind with age. In the case that developed at nine months the remarks say that mother was blind for four days with pink-eye when nine months old.

One observer remarks that he has seen in the past year probably thirty or forty cases of ophthalmia not traceable to heredity, but many following attacks of pink-eye.

Of the kickers, in sex five were males and four females; in color four were bays, four sorrels and one black; in four the breed is not given, the remaining five all being grade Normans. The age of development in one is not given, in five it was developed from foaling, and in three during the third year. In no case were sire and dam both free from the habit; in six cases dam had habit, and in one the sire; in one case both sire and dam had habit; in one case grandam had the habit, and in another both grandam and great-grandam.

The remarks in these cases are not only interesting, but positively amusing in the case of one that developed the habit at three years old, the subject, a female, produced seven colts that were kickers. They would acquire the habit without the dam teaching them. Eight of the cases of kicking recorded were related, and observer's remarks are as follows:

"These animals, although kept hard at work on a farm, became vicious and would kick. These animals all seem deficient in the osseous development of the head, especially the zygomatic processes; animals were well formed, but all presented a peculiarly small and ill-set eye, which was nevertheless very keen of sight, thus making the vice doubly mean, as they would not only kick at you, but probably hit you every time. The remarks continued to say that for four generations these horses have been vicious, and all except one remain the property of the same man. Human nature is very strange. Too generations of kickers, and good shots at that, would be enough for the average mortal, and we all exclaim, why didn't he get rid of them? No doubt he went on the theory that "its a long lane that has no turn," and his perseverance was finally rewarded, for the remarks say that in the fourth generation a colt was foaled that was a prodigal.

Of the cribbers the sex was equally divided, three being male and three females; in color, two were bays, and one each black, white, brown and grey. The age of development in one case was as early as the second month, three at four years, one at five and one as late as twelfth. In three cases dam had same habit. Observer remarks that in one case incisor teeth were close together, but an operation resulted in no benefit.

In another case observer is of opinion that colts acquire habit more by imitation than heredity, as when colts were taken from dam's side when young they became free from habit.

In the case that developed at twelve years old observer remarks no assignable cause; animal has thrived poorly for past fifteen months.

In the case of balkiness the subject was a bay mare. She produced three colts, all by different sires; all showed balkiness, especially after standing a day or so.

Your committee, in conclusion, wishes to remark that although a sire or dam may be perfectly sound, if they have a bad formation of joint, their progeny are likely to inherit said formation, and under proper, or, rather, improper conditions, develop unsoundness. This is a point breeders should look well to.

And we would rather breed to a sire with a good flat hock, that under extraordinary strain had thrown out a spavin, than to one that had a hock that didn't suit us, but had not been put to the test, and had, therefore, remained sound; and our observation, limited though it be, has led us to the conclusion that it is the conformation that is to be looked for, as much, if not more, than the bony enlargement.

Are horses with round, short, weak, fleshy, though technically sound hocks, that can scarcely carry the carcass of a lumbering fat horse, to be passed sound, whilst those with long, bony, ragged, and it may be, uneven hocks, that are flexed and extended with freedom and power, and which you know from experience will stand the most severe tests of physical exertion, to be rejected?

We also express a wish that the committee of next year will have better help from the members individually than the committee about to retire has had. We ought all to remember that according to the rules of our Association it was constituted for the purpose of advancing veterinary science in general.

The advancement of the science necessitates that the individuals who practice the science should be themselves advancing. There is no time for retrogression, and the Society must not stand still in regard to notes on heredity.

DISCUSSION.

Dr. Shipley thought many of the members did not clearly understand just what was required to properly fill out the blank notes on heredity, else more reports would have been received. He reported the development of laminitis in three successive generations as follows:

A mare contracted laminitis as the result of a hard drive; the disease became chronic. The mare was bred and dropped a mare foal. This animal developed chronic laminitis when five years old, without apparent cause. An eighteen-months-old colt from the latter mare has developed chronic laminitis without apparent cause.

Dr. Edwards said he had seen similar cases.

Dr. Brown had seen many cases of ophthalmia, apparently specific, which he thought were sequels of influenza.

Dr. Derwent: I have met with quite a number of cases of ophthalmia which developed directly after convalescence from influenza, and am convinced that influenza is an exciting cause of the eye trouble.

Prof. Stalker thinks that dark stalls are an exciting cause of this disease of the eye, and related several cases in substantiation of this theory.

Dr. Edwards: I am of the opinion that a corn-grain diet predisposes to or is the exciting cause of ophthalmia. I find that nearly all of my cases are in horses which are grained with corn exclusively.

The Board of Censors reported favorably on the following-named applicants for membership:

H. M. Replogle, J. A. Replogle, W. R. Cooper, E. K. Paine, T. A. Shipley, S. H. Bauman, Davis Coffee, and N. Sorenseen.

Moved by Dr. H. Shipley, seconded by Dr. Starkey, that the Secretary be directed to cast the ballot of the Association for the applicants for membership. Carried.

Moved by Dr. Brown, seconded by Dr. Stewart, that the President appoint a committee of three as a Committee of Arrangements for this Association, to co-operate with the committee of arrangements of the United States Veterinary Medical Association and committees of other State associations for the Chicago meeting, and that this committee be given full authority to act for this Association. Carried.

EVENING SESSION.

Association called to order at 7:30 P. M. by Dr. Edwards.

Dr. W. R. Cooper read a paper entitled "A Study of Septic Germs," which gave rise to considerable discussion,* and was followed by Dr. L. W. Shipley, who presented a paper on "The Congestion of the Liver."

The Association adjourned to the sumptuous banquet, which was much enjoyed by the members present.

SECOND DAY.

Association called to order by Dr. Edwards at 10 A. M.

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*This will be published in our next issue.

Dr. G. L. Buffington read his paper on "The Sclerostoma Tetracanthum," which was followed by a general discussion.

Dr. M. H. Raynolds read a paper entitled "Fistula." The paper discussed quite fully the anatomy of the parts involved, with special reference to surgical operations for its cure. It dwelt upon the latest theories relative to the development of pyogenic abscesses as applied to fistula and poll evil. Advocated bottom drainage by means of a seton and cited several cases illustrating this method of treatment.

This paper elicited a general discussion by all the members present.

Dr. W. B. Niles read a paper on "The Use of Disinfectants in Veterinary Practice," which was quite fully discussed by all.

Dr. J. A. Replogle read a paper entitled, "A Study of Carbolic Acid as a Disinfectant," which was not discussed owing to lack of time.

A paper, "Experiments With Lysol," was read by title.

After the election of officers, with appointments of the various committees, the meeting adjourned.

S. STEWART, *Secretary.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

We have received notice and a kind invitation to attend the next meeting of the Society, which is to be held on the 12th of January, 1893, with request to notify all the members of the profession in the State of New York, and invite them to be present. We are informed that important papers are to be read and discussed, and also a revision of the by-laws and constitution.

For further information, inquiries can be made of Dr. N. P. Hinckley, Secretary, Buffalo, N. Y.

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AMERICAN VETERINARY REVIEW,

FEBRUARY, 1893.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Who would have dreamed some twenty odd years ago of the success which has been, in fact, achieved by this Association, or of the important influence which its members have wielded on subjects pertaining to the general welfare of the veterinary profession of America? And yet, notwithstanding what may justly be termed the heterogeneous characters of the elements, it has by a steady progression, year by year, at each successive meeting, improved both in its composition and its work, and the resulting augmentation of its importance and value as a central source of influence, that to-day it has not only become the accepted representative body of the veterinary profession of America, but has acquired such a weight of authority as to enable it to initiate and establish a movement towards which for years many veterinarians have vainly (because singly) worked, to wit: the establishment upon a permanent foundation of an advanced and uniform standard of education for veterinarians in the United States. The result of this labor of a little over twenty years is that at the present time hundreds of qualified veterinarians are answering the roll calls, and that the day is rapidly near when a certificate of membership in the United States Veterinary Medical Association will be as proud a title as any that can be desired within the purview of our profession.

During the present year, the Association will avail itself of the occurrence of the great Columbian Fair in Chicago to participate in the scientific part of that exhibition by means of a representation of its membership convened in a congress, who will officially receive the foreign delegates who it is hoped will respond favorably to the official invitations to be transmitted to them, and who it is hoped will, by their discussion of the interesting matters which will be brought forward for investigation, invest with a historical character what will be not only the twentieth annual meeting of the Association itself, but the *First International Veterinary Congress of America.*

To insure the success of this most notable occasion, every veterinariy association on this continent should consider itself bound to contribute its best efforts, and a glance at the report, published in the present issue, of the meeting of the *Comitia Minora*, held but a few days ago in New York City, will show that the officers are fully awake to the importance of the work entrusted to their care, and are giving evidence of the earnestness with which they are now laboring.

We take great pleasure in recording the minutes of the meeting of the *Comitia Minora*, and we invite our friends throughout the land to avail themselves of our pages for any remarks or suggestions they may be disposed to offer to the chairmen of the various committees, or to any others who may have charge of the arrangements for the meeting.

ORIGINAL ARTICLES.

A STUDY OF SEPTIC GERMS.

By W. R. COOPER, D.V.M.

(A paper read at the Iowa State Veterinary Medical Association).

The study of septic germs necessarily embraces the subjects—septicæmia, pyæmia, osteomyelitis, and puerperal fever These diseases have been ascribed to many causes. Thei etiology has been a study of considerable interest, as well a importance to the medical profession. Septicæmia arises fro the presence of a morbid element in the blood, caused by a local infection with general but no local symptoms. Senn says "True sepsis is looked upon as general infection from some local source, unattended by any gross, pathological change." Pyæmia is a morbid condition of the blood arising from local infection with general symptoms and the presence of multiple abscesses. Senn says "pyæmia is not a disease by itself, but its occurrence depends upon the extension of a suppurative process from the primary seat of infection. The distant or metastatic abscesses contain the same microbes which are found in the wound secretions, or the abscesses from which the general purulent infection took place."

The early opinions regarding septicæmia were, that it was caused by the absorption into the blood of some putrefying animal matter, and that pyæmia was caused by the absorption of pus into the blood. Pyæmia and septicæmia were synonymous terms.

Osteomyelitis is caused by some point in the bone becoming necrotic and from a general source of infection, locating at that point, producing an abscess within the structure of the bone.

Puerperal fever owes its origin to a septic infection entering the general system through the uterus, producing a general process of septic invasion.

The experimental evidence of different eminent bacteriologists tends to prove that the same germs may produce all these diseases.

The history of the germ or microbic origin of Septicæmia, pyæmia, osteomyelitis, and puerperal fever began with Rindflesh, in 1866, who made the first reliable investigations. He found bacteria in abscesses. Klebs, in 1872, initiated a new era in the etiology of septic diseases, and differentiated between septicæmia and pyæmia, although he claimed that putrid and septic infection were the same. Rosenbach, in 1884, found the staphylococcus pyogenes aureus in three cases; in two of the cases gangrene appeared in which he found the streptococcus pyogenes. Chauveau and Galtier attributed the production of leucomaines to the germ present.

Watson Cheyne, in 1888, pointed out that germs produced toxic ptomaines and that they do not make emboli. He stated that they were not always cocci but sometimes rods. Besser found streptococcus in the blood and tissues in cases of septicæmia, thereby supposing that it was the sole cause of the disease.

Senn says: "From the above historical consideration it becomes evident that the essential cause of septicæmia has as yet not been demonstrated, but that the streptococcus has been found in the products of septic inflammations."

From the previous mentioned evidence the bacterial origin of the disease arising from septic infection is affirmed to a practical certainty, but not without a doubt in the minds of a few. Subsequent experiments very forcibly strengthen the theory that all septic diseases owe their origin to bacteria.

There are also special forms of septicæmia:—as mouse septicæmia, caused by the bacillus tetragenous, which is obtained from the sputum of man. If injected subcutaneously into mice, it produces a fatal form of septicæmia. Another form fatal to mice is caused by inoculating them by a bit of earth. The hog-cholera bacillus, and the germs obtained with the bacillus tuberculosis from the sputum of man, produce fatal septicæmia in mice. These forms do not produce the typical septicæmia of higher animals. Baginsky records two cases of pyæmia in sucklings. In one case the cause was from suppurative inflammation of the nœval with œdematous swelling of the entire extremities. The microscope showed that streptococcus occurred in the internal organs, such as the kidneys, spleen, lungs, liver, and blood vessels. Streptococci pyogenes were obtained from the pus of the abscesses found. Bobroff described osteomyelitis as arising from a center of infection into which staphylococi are carried by the blood, especially when the bone offers lessened resistance which may be caused by tromatism.

From the above evidence the relation of septicæmia, pyæmia, osteomyelitis, and puerperal fever is established; as different experimenters describe the same germs and ascribe to them the cause of all these affections. Thus explaining the theory that septicæmia and pyæmia are quite similar in etiology. Hoff says that septicæmia and pyæmia, etiologically are not so sharply separated as has been supposed, both forms (as well as septico-pyæmia) are caused by the same micro-organisms (the common pus germs), and that it remains to be established under what conditions pyæmia is produced, and under what conditions septicæmia. He reported that in six cases, four had staphylococcus pyogenes albus, and one had a bacillus. The germs occurred in the blood.

The germs found and described by different authors as the cause of septicæmia and pyæmia, are streptococcus pyogenes, staphylococcus pyogenes, var. aureus; staphylococcus pyogenes, var. albus; staphylococcus pyogenes, var. citreus.

The streptococcus pyogenes (Rosenbach Zopf.) is a coccus occurring singly, in chains, or zoogloea. It is similar in appearance to the streptococcus erysipelatous, single cocoi appearing larger than those in pairs or groups. It grows well on nutrient agar agar at 35°–37° C. forming centers which are rounded, not raising above the surface. It does not grow well on potato or gelatine, and does not liquify any nutriment media. When grown on gelatine it appears as a grayish white, semi-transparent mass, thin at the edges and arranged in terraces thickening towards the center. Old cultures present a faint tinge of brown. It is not specially sensitive to the absence of air, decomposing albumenoids under those conditions.

The staphylococcus pyogenes, var. aureus (Rosenbach, passet, 1884) occurs singly, in pairs or in irregular masses. The cocci are of equal size, growing well on agar agar gelatin, potato, or bouillon at 35°–37° C. Young cultures are whitish, gradually turning to an orange yellow. It does not produce spores, but notwithstanding, it has a remarkable power of resisting external, destructive conditions, growing a great length of time in the absence of air. It peptonizes and liquifies gelatin rapidly. It is very pathogenic when injected into the blood or peritoneal cavity; producing septicæmia and death in a few days, or suppuration of joints and suppurative endocarditis. Injected subcutaneously it produces abscess.

The staphylococcus pyogenes, var. albus (Rosenbach, 1884) is similar to the var. aureus in every respect except color, being white. It possesses an extraordinary vitality, living 3½ years in the absence of air. (Crookshank).

The staphylococcus pyogenes, var. citreus (passet) also resembles the var. aureus in all respects except color and form of growth, being a light lemon yellow, and presenting a wrinkled growth on nutrient agar agar. The relative number of cases containing the different germs varies. In septicæmia where no abscesses are formed, the streptococcus pyogenes is found in the greater number of cases. In Pyæmia with multiple abscesses, the staphylococcus pyogenes, var. aureus, is found most frequently, the staphylococcus pyogenes, var. albus, less frequently, the streptococcus pyogenes still less frequently, and the staphylococcus pyogenes, var. citreus, occasionally.

The germs that have been isolated from the clinical cases of the Veterinary Hospital during the past year, were the staphylococus pyogenes, varieties aureus, albus and citreus; and the streptococcus pyogenes. The several varieties of the staphylococcus pyogenes were isolated many times from abscesses and wounds. The streptococcus pyogenes was obtained from the liver of a suckling foal about ten days old that died of septicæmia, May 10. Post-mortem examination revealed a very dark or blackened appearance of the intestines. An abscess near the naval which was the point of infection. The liver and spleen were very dark in color. The germ was obtained from the liver. It was cultivated in bouillion and agar agar. Experiments with this culture were as follows:—June 2, inoculated a mouse subcutaneously from the agar agar culture of May 10. Death occurred in about twenty-four hours. The post-mortem examination revealed an enlarged liver, the spleen dark-colored and the intestines nearly black. The liver contained a streptococcus which was then used, June 4, to inoculate a mouse subcutaneously. Death occurred in about twenty hours. The post-mortem examination revealed an enlarged liver and spleen, which was dark-colored. The lungs were covered with extravasated blood and very dark-colored. The germ obtained from the liver was the same as that obtained from the colt, or the streptococcus pyogenes.

September 27, inoculated an old buck rabbit subcutaneously with the streptococcus pyogenes obtained from the colt, using the second transfer. Transfers were made May 10, 1892 and June 13, 1892. October 10, the rabbit remained healthy, no effect having been produced.

Some experiments were made with the staphylococcus pyogenes varieties aureus and citreus to determine the length of time the germs retained their pathogenic properties.

August 1, inoculated a mouse with staphylococcus pyogenes, var. citreus, using the fourth culture. Cultures were made October 31, 1891; February 10, 1892; June 2, 1892 and July 29, 1892. It produced no effect, the mouse remaining healthy.

September 9, inoculated intraveinously an old buck rabbit with the staphylococcus pyogenes, var. citreus, using the fourth transfer. Transfers were made October 21, 1891; February 10, 1892; June 2, 1892; July 29, 1892. It produced no effect. The original culture had been very pathogenic.

September 18, inoculated a spotted rabbit with staphylococcus pyogenes, var. aureus, using the last transfer. Transfers were made October 26, 1891; February 10, 1892 and July 29, 1892. It produced no effect.

The cultures being nine months old August 1st and non-pathogenic, proves that the germs staphylococcus pyogenes aureus and citreus lose their pathogenic properties within that time.

Further experiments with the staphylococcus pyogenes aureus were as follows:—September 20, inoculated a small rabbit subcutaneously, using the last culture. Cultures were made August 22, 1892 and September 12, 1892. It resulted in a small abscess at the point of inoculation, followed by another at the base of the left ear. Otherwise the rabbit remained healthy October 8, 1892.

October 7, inoculated a white rabbit with staphylococcus pyogenes, var. aureus, using the last transfer. Transfers were made August 8, 1892 and September 12, 1892. Death occurred in thirty-six hours from general septic infection. There were no local symytoms. The germ was obtained pure.

The experimental evidence of different authors, together with experiments made in the laboratory, throw a great amount of light on the etiology and development of septic diseases. The diseases:—septicæmia, pyæmia, osteomylitis and puerperal fever, being caused by the germs staphylococcus pyogenes, varieties aureus, albus and citreus, or the streptococcus pyogenes, are related in their being caused by one germ of the above classes, or two or more collectively.

The study of pathology reveals the fact, that when any point within the animal economy assumes the condition from any cause whereby to foreign elements it presents a lessened resistance, a local inflammation will be the result. If under such conditions that point of lessened resistance is exposed to the common pus germs, infection will be the result. If that point be only a place wherein the germ may enter the system, a local inflammation may be the result, or if the germ be introduced through that point directly into the general circulation a septic infection will ensue, ending in septicæmia. But when under any conditions the germ becomes lodged in the course of its passage through the vessels, it will then establish a local process, which may be quite remote from the original point of inoculation. Also from the fact that all germs multiply very rapidly, there will probably be a local process at the seat of inoculation, and a general process of septic invasion as well. If the point of lessened resistance be the cancellated structure of a bone, and general infection does not destroy the animal, osteomyelitis will be the result. While if the point of infection occurs in the uterus after parturition, when the resistance of that organ is much less than normal, an inflammatory process is established, which passing rapidly to other parts of the body, produces a septic infection with all the symptoms of septicæmia arising from any other point of inoculation, Owing to the condition in which the infection takes place this is called puerperal fever.

The difference in the character of growth and dissemination of the staphylococcus pyogenes and streptococcus pyogenes accounts for finding more frequently the streptococcus pyogenes in septicæmia than the staphylococcus pyogenes which appears mostly in local processes.

The experimental work in the college laboratory demonstrates that fresh cultures of the common pus germs, under different conditions produced different forms of septic infection. The work with the staphylococcus pyogenes, varieties aureus and citreus, was partly to determine the length of time the germs retained their virulence. With the aureus, three generations, embracing a period of nine months, was sufficient to destroy its virulence. With the citreus, four generations, embracing a period of nine months, was sufficient to destroy its virulence. Experiments with the streptococcus pyogenes to determine the time it retained its pathogenic properties demonstrated that two generations, embracing a period of five months, was sufficient to destroy its virulence. Such experiments prove that continued cultivation outside the animal body destroys the pathogenic properties of the germs of sepsis, although they retain their physical powers of development.

"SEEDY TOE."

By W. Bryden, V.S., Boston, Mass.

(A paper read before the Massachusetts Veterinary Medical Association).

About fifteen months ago I was called to examine a lame horse, one of a handsome pair of grays, used on the engine of the fire department at Medford, a pleasant town situated some five miles from Boston. They were a well-matched, nicely trained span of strong, speedy horses, some ten or eleven years old, fifteen hands three inches high, and weighng about fourteen hundred pounds each. Being general avorites, it was ill news for the boys when they learned that one of their splendid gray fire team was seriously lame.

On examination of the derelict foot (the off fore one), the disease was found to be what is generally known as "seedy oe." It had evidently been affected for many months, gradually showing greater brittleness of the lower part of the wall and of the sole in front. Indeed, the characteristic retrograde changes in the horn at the coronet in front, and its separation and projection nearer the toe proclaimed the foot a victim of hoof depravity of many months' existence; and the stage it had arrived at, one which nature with all the assistance art could give her, would require months to repair, unless a job of patchwork should be attempted and prove satisfactory to the owner.

The near foot was also imperfect, but from a different combination of circumstances. The wall had general contraction, but it did not become short and brittle at the lower margin of each side of the hoof, nor was the growth at the coronet in front almost entirely arrested, as shown by the other foot, two features of great interest and significance in the pathology of the horse's feet and limbs. Another point worthy of note suggested by the case is that (1) laminitis followed by seedy-toe may possibly be quite a different pathological condition—only one foot being usually affected; and (2) laminitis followed by chronic founder in which two fore feet, two hind feet, or all four feet, are simultaneously and similarly affected. As both are curable conditions up to an advanced stage, and the treatment much alike, the importance of being able to discriminate between these two conditions is robbed of some of its practical value, but not of its scientific interest; that is, whether one has an element of constitutional trouble which is wanting in the other.

In studies of this subject it is well to bear in mind that the hoofs of horses vary greatly in form, size, and quality in individuals, even of the same family; and that domestication, with the restraints incident thereto, subjects them to many unfavorable experiences and adverse changes which still further predispose them to unsymmetrical growths, perhaps to diseases of the limbs, especially those peculiar to their species. For example, hoofs sometimes do not grow alike, *i. e.*, it is not unusual to find the two fore feet mismated, or the two hind ones either; indeed, all four feet may be different. Other circumstances, such as want of tear and wear, unsuitable soil and climate, accidents and exposures, especially during colthood, when the hoofs are growing, or rather developing, often incline them to defective forms and qualities at maturity, which are readily excited to disease when the animal happens to be assigned to labor and surroundings unfavorable to its limbs. Seedy toe is oftenest found affecting a fore foot, and predisposition to this family of diseases may be the result either of heredity or of some peculiarity acquired after birth.

There are many different degrees of such hoof depravity, as well as stages of degeneration, and it is in their repair, rather than in their early history, where their greatest resemblance is often seen.

1. One case may be nothing more than a small discolored area of sole where a nail has been driven too deep into a part where the vitality of the tissues has become so much impaired that they are unable to contribute their share either to their own nourishment or in repairing the injury.

2. Another case may be a foot with its hoof so warped and deformed that it resembles a club foot; a frequent exciting cause of this is when the coronet is crushed from a loaded team passing over it.

3. Another case may be one where the secreting structures at the pyramidal process are so crowded that the wall in front stops growing, and so does the laminæ extending to the toe. When these laminæ give way, the toe of the coffin-bone is forced down and back till it rests on the sole just in front of the frog; here it soon becomes bruised, then thin, and finally convex; the space between the coffin-bone and the wall in front becomes filled with debris; the wall between the coronet and toe settles down, while the hoof at the heels grows vigorously, forcing the wings of the coffin-bone upward and the pyramidal process forward against the defectively nourished wall in front, the toe of the coffin-bone being held back by the perforatus tendon inserted in its sole. This variety has usually been described as an example of chronic founder of one foot; it is the form from which "Mortimer" suffered when Mr. Lorillard imported him from France. The following gives an outline of a case frequently met with, viz.:

When the sole has been dressed with a rasp, the zone between the sole margin and the wall, which ought to be white, is found to be red. At next shoeing it will be a brown color; next it will be still browner, and so on till the wall and sole are entirely separated and crumbling. A gradual destructive change takes place within the foot where the circulation and other vital functions have been gradually becoming more disturbed and interfered with, perhaps for months. Accidents, such as burning with a hot shoe, must not be mistaken for this disease in its earlist stages. As the coronet gradually tightens it exerts mechanical pressure on the coronary cushion and laminæ; the circulation is diminished in force and volume, and the wall shortens more and more from the extremities of its horn fibres crumbling faster than it grows, till it cannot be reached by the nails. When the foot is without protection from either horn or shoe it is unfit for work until nature has restored the part sufficiently to secure the shoe with nails.

The stage at which this disease has arrived indicates with considerable exactness both its age and the time required for its repair. As already stated, cases vary accordingly as they reveal a history of gradual invasion, or evidence of having been hastened by some coincident, such as an accident, or from harsh or improper treatment.

With your permission I will now illustrate my remarks by describing the treatment of the Medford horse. It was my good fortune to find the superintendent, Mr. Arthur Symms, a gentleman of more than ordinary judgment in matters pertaining to the horse's feet and limbs. He did not expect me to perform a miracle, or to cure the beast in one or two times shoeing. After examining the case carefully, I assured him that complete recovery was possible, but that it would take at least eight months before he could again be used on the engine, as it would require that length of time before the hoof could grow down sufficiently for a shoe to be fastened so as to be equal to the quick, heavy work demanded in such a place. During most of the time, I further assured him, the horse could do enough slow, light work to pay for his keep, and as I would only require to see him about once a month it would pay well to treat him rather than sacrifice a good animal by selling him for about $25, which was all any one would be likely to give for him with hardly three legs to stand on.

It was decided immediately to let me take charge of the case, so he was led into the shoeing shop, where I had the hoof trimmed as follows: From the coronet about half way to the toe the horn grew in narrow circles, gradually increasing toward the heels; below this at the toe the horn projected away from the coffin-bone, the toe of which had crumbled away. The circles at the coronet in front, and the projecting horn lower down, were all rasped and cut away till the part looked more like its natural shape. This left the heels high and the coffin-bone in the position of an upright wedge, the diseased toe pointing to the sole in front of the frog where the part was settled down. To correct this position of the coffin-bone the commissures were pared out and the heels opened and lowered; after this the wall was thinned at the heels and wherever else it could be done without interfering with the nailing on of the shoe as early as possible. Above the nail holes a saw was used to cut the wall in line with the horn fibres; this instantly freed and limbered the crowding wall, and yet left enough hoof to nail to, which the rasp would have taken away. The saw is the same formerly used for "diamonding" the wall in cases of ringbone, side bones, enlarged cartilages, etc., cases where the hoof is always contracted. After carefully adjusting the hoof so as to set the coffin-bone at an angle which would relieve the crowding of the pyramidal process and adjacent coffin-bone against the horn in front by allowing the wings of the coffin-bone to settle between the hoof heels, a shoe was fitted as follows:

A plain, light shoe with a fairly wide web was taken, and from the toe to the second nail holes was hammered out thin, and then rolled up in front of the foot to protect the part which the disease had denuded of its horny protection from coming accidentally in contact with the ground. Side lips or clips were turned up at each side to relieve some of the strain from the nails, and the nail holes were punched so as to be in line with and reach the wall which was strongest. Two heel-corks were then turned up about one-third of an inch high, and two more the same height, one on each side, set back from the toe about two inches; when the shoe was applied he still walked lame on it, but after poulticing it for about three weeks every night with oil meal and five per cent. solution of carbolic acid, the hoof began to start growing, the sore spots to become less tender, and he was able to perform daily errands and slow, light work.

As the department buildings are near the marshy banks of Mystic River, he was allowed to stand in an open pen of fresh peat bog every day for an hour or two when not in poultices. The hoof was reduced every time he was shod, the wall grew down with perfect regularity until at the conclusion of eight months he was returned to his old place on the engine as sound as ever. Twelve months after my treatment commenced there was no trace of the disease excepting a hollow place or dent in the toe, showing where the point of the coffin-bone had crumbled away from necrosis.

LYSOL AS A DISINFECTANT.*

By Dr. C. B. Adams.

The question may be asked: What is the difference between a disinfectant and an antiseptic? Therefore a discrimination is necessary before other facts are introduced.

An antiseptic is an agent which, by contact with a germ, retards, but does not destroy, its powers of reproduction and growth. A disinfectant is an agent which, when brought in contact with a germ, utterly destroys it.

Many of the agents heretofore classed as disinfectants are mere antiseptics. For example, corrosive sublimate. Experiments have established the fact that it does not destroy the germ, but enters into a chemical union with the protoplasm of the germ, and when freed with chemical agents (which, by the way, are present in the blood), the growth is virtually as vigorous as before the subjection. Hence, we deduct this conclusion, that a disinfectant is always an antiseptic, and that an antiseptic when used in stronger solutions may be a disinfectant.

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* Paper read before the Iowa Veterinary Medical Society. This paper reprints work done in connection with a graduating thesis, under direction of Dr. W. B. Niles, at Iowa Agricultural College, Veterinary Department.

For the basis of my experiments I have taken the staphylococcus pyogenes aureus, the action of which is the bitterest antagonist with which the surgeon has to deal, and the drug known as lysol.

As a result of recent investigation in Europe, the popularity of lysol is fast disseminating throughout the progressive class of practitioners. In America it is fast becoming the subject of much comment, but as yet little investigation has been made.

In order that this agent (which is comparatively new), should have a place in the above named category, it is necessary and just that its efficiency should be proven. That such should be proven, so as to leave no doubt, the most virulent pus-forming organism was selected.

I hope farther along to bear out the statements which have already been made in regard to it, namely, that it is a true disinfectant.

Lysol belongs to the group known as cresals, and is a coal tar product, hence its close relation to carbolic acid. The cresals are, as a rule, practically insoluble. However, when the question of solubility among the different members of the group came into consideration, and the matter put to a practical test, we find that lysol, in a soluble form, is obtained by dissolving in fat, and afterward saponifying with alcohol, that fraction of tar oil which boils between 100° and 200° centigrade. It is a brown, clear liquid, possessing a creosote-like odor, forming clear, compatible mixtures with water, alcohol, benzine, chloroform and glycerine.

The virulence of the germ was demonstrated by inoculating the rabbit, which died in thirty-six hours with septicæmia. The experiments were conducted with the utmost care and regard for accuracy. We have reasons to believe, therefore, that they are correct, and convey a correct idea of the virtues of the drug.

A few slight irregularities may be observed in the results. The reader will have to remember the many difficulties attending the making of cultures. Perhaps in one or two cases our means of contention against those obstacles were not sufficiently observed, or the germs in one solution may have become aggregated into masses to a more or less degree ; as we are dealing with a mechanical suspension, this is very likely to occur. I have in a great measure followed the method used by Prof. John Abbot, of Hopkins University. After forty-eight hours' growth of the germ in bouillion culture media, one cc. of the media containing the germ was placed in 20 cc. of the lysol solution. With a measured dropping pipette one drop of the solution containing the germ was transferred to 10 cc. sterilized water, for the purpose of so diluting the disinfectant as to insure no farther action, one drop of this was then transferred to 10 cc. agar agar, at a temperature of 40° C., and plated according to the Koch method.

The inoculations were made from the solution, after various lengths of time, as seen by the experiments.

SERIES I.

Exp. 1 :—½ per cent. solution. 1 cc. aureus culture, grown 48 hours in bouillion, was placed in solution (20 cc.) and the plates made as follows :

The one taken immediately, 8 ; in 5 minutes, 0 ; in 10 minutes, 0 ; control plate, countless. Counted after 48 hours' growth.

2. ½ per cent. solution. 5 minutes, 0 ; 10 minutes, 0 ; 20 minutes, 0 ; control, 526. Counted after 72 hours.

3. ½ per cent. solution. 5 minutes, 1 ; 10 minutes, 0 ; 15 minutes, 0 ; control, 1,652. 72 hours' growth.

SERIES II.

1. 1 per cent. solution. 1 cc. aureus culture grown 48 hours in bouillion, placed in solution. 5 minutes, 3 ; 10 minutes, 0 ; 15 minutes, 0 ; control, 38. 48 hours' growth.

2. 1 per cent. solution. 5 minutes, 0; 10 minutes, 0; 20 minutes, 0; control, 659. 48 hours' growth.

3. 1 per cent. solution. Immediate, 2; 5 minutes, 2; 10 minutes, 0; control, countless. 48 hours' growth.

SERIES III.

1. 2 per cent. solution. 1 cc. aureus culture grown 48 hours in bouillion, placed in solution, 10 minutes, 0; 15 minutes, 0; 20 minutes, 0; control, 256. 72 hours' growth.

2. 2 per cent. solution. Immediate, 5; 5 minutes, 0; 10 minutes, 0; control, countless. 48 hours' growth.

3. 2 per cent. solution. Immediate, 0; 5 minutes, 0; 10 minutes, 0; control, countless. 72 hours' growth.

4. 2 per cent. solution. Immediate, 0; 5 minutes, 1; 10 minutes, 0; 20 minutes, 0; no control. 72 hours' growth.

5. 2 per cent. solution. 10 minutes, 0; 15 minutes, 0; 20 minutes, 0; control, 256. 48 hours' growth.

SERIES IV.

1. 3 per cent. solution. 1 cc. aureus culture grown 48 hours in bouillion, placed in solution. 5 minutes, 0; 10 minutes, 0; 15 minutes, 0; control, countless. 48 hours' growth.

2. 3 per cent. solution. Immediate, 0; 5 minutes, 0; 10 minutes, 0; control, countless. 48 hours' growth.

Thus we see that between a ½ and 1 per cent. solution, there s but little difference in results. In the whole a ½ per cent. solution is in many cases of sufficient strength to destroy a majority of the germs. A 1 per cent. solution is but a very ittle more vigorous in its action.

The action of a 2 per cent. solution is positive in every case save two; one immediate plate having five colonies, and one 10 minutes plate having one colony. Four 3 per cent. solutions gave complete action every time; all growth being destroyed even on the plates made immediately.

As a 3 per cent. solution was found to be of sufficient strength to overcome all resistance, no stronger solutions were used.

A few experiments were made upon the bacillus subtilis, a spore-forming organism, for the purpose of finding out the resistance offered by the spores on the various solutions of lysol. After 72 hours' growth of the germ in bouillion, it was filtered through glass wool. The operation from here on is exactly the same as those with the aureus.

Exp. 1. 1 cc. bacillus subtilis culture, grown 72 hours in bouillion placed in solution. 1 per cent. solution. Immediate 5; 5 minutes, 0; 10 minutes, 0; control, 497. 72 hours' growth.

2. 1 per cent. solution. 5 minutes, 5; 10 minutes, 2; 15 minutes, 0; control, not good. 72 hours' growth.

It is probable that the inoculation for the control plate was taken from the wrong water tube, as the germ was passed through 10 cc. water before putting it on the agar plate.

3. 2 per cent. solution. 1 cc. sub. culture grown 48 hours in bouillion was placed in solution. 5 minutes, 0; 10 minutes 0; 15 minutes, 0; control, 13. 72 hours' growth.

4. 2 per cent. solution. 5 minutes, 0; 10 minutes, 0; 15 minutes, 0; control, 497. 72 hours' growth.

The experiments show that a 1 per cent. solution is not o sufficient strength to overcome, in every case, the resistance of the spore, but a 2 per cent. solution's action was positive in every case.

CONCLUSION.

After summing up the results of our investigations, what are the conclusions. Our sphere of investigation embraces only disinfectant properties of lysol. A glance, however, a the physiological properties, and a few of its virtues, in general, will strengthen what may be said of it as a disinfectant

From experiments we are convinced of its powerful germicidal action. It is deserving of a high rank.

1st. Because of its power in weaker solutions, as compared with carbolic acid.

2d. Because it is but slightly, if at all, poisonous to th system, as shown by Dr. Michelson, who flooded the abdominal cavity with a $\frac{1}{3}$ per cent. solution, and did not observ even the slightest symptoms of poisoning, and also Drs. Gerlach and Sugg, who experimented separately, and arrived a the same results, namely, that the minimal fatal doses for each kilo of body weight are as follows: for carbolic acid, 0.3 grains; for creolin, 1.1 grains; for lysol, 2.3 grains. Thus showing by actual demonstration that carbolic acid is eight times more poisonous than lysol, and that creolin is twice as poisonous as lysol.

3rd. It is the most easily soluble of all disinfectants.

4th. Its cost is so reasonable as to permit of its general use in surgical practice; ½ per cent. solution being equal in strength to a 2 per cent. solution of carbolic acid. One has but to compare price lists to determine that the odds stand 10 to 1 in favor of lysol as regards cost.

5th. Its great value as a deodorizer.

As regards the saponifying character of lysol, a great deal may be said in its favor, Especially is this true in cases of gynæcology and obstetrics, as the condition sought for in a great many cases, is produced by this agent.

Dr. Pee reports its use in 550 cases in the Berlin obstetrical clinics with the best of results in every case; a ½ per cent. solution was used.

In wounds its oily property serves the purpose of soap and thus more deeply penetrates the infected tissues.

As to how the destruction of the germ is brought about I am unable to state with any degree of certainty. All evidence goes to show, however, that it does not form a chemical union with the organism as does corrosive sublimate.

Several bouillion tubes were inoculated from the solution after the germ had remained in contact with it from 15 minutes to 1½ hours, and after periods varying from 3 to 7 days no growth had taken place thus showing that a liquid media has no power to release the germ. Should it be a chemical combination, corrosive sublimate and carbolic acid have always held the foremost rank as disinfectants and antiseptics.

Investigation has proven corrosive sublimate to be a traitor as a true disinfectant. It is not, however, denied an honorable place in the list of antiseptics.

The poisonous effects of carbolic acid have been, to a degree, demonstrated, and after carefully considering the merits and demerits of the different members of the class of antiseptic and disinfectants, and after examining the virtues of lysol, we arrive at the conclusion that to the short list of true disinfectants lysol is a worthy member.

THE SCIENTIFIC INVESTIGATIONS OF THE BUREAU OF ANIMAL INDUSTRY.

By D. E. Salmon.

(*Continued from page 548.*)

We may also ask with much reason how Frosch can consider that Billings' inoculations of hogs with a germ which the experimenter insists was not the hog cholera germ, and has no resemblance to it, nevertheless fill out the gaps and bridge over the doubts which he believes to exist on account of what he calls our objectionable methods in proving the pathogenic action of the hog cholera germ? He certainly has no right to assume that because Billings sent him the hog cholera germ as his swine plague germ, in 1889, that this was the germ with which he worked previous to 1888, when Billings expressly says so often in his report that it was not that germ. This is one of Frosch's conclusions drawn from data other than that obtained from his bacteriological investigations, and it shows how utterly unreliable he is when he leaves his own results and attempts to analyze and weigh reports of investigations written in the English language. For no one can suppose that inoculations with one germ would be of any value toward proving the pathogenic action of an entirely different organism.

This is only one of the attempts which he has made to criticise the Bureau and endorse the work of Billings, in cases where an examination of the latter's report does not sustain his language. For instance, he criticises the Bureau reports because the cultures used for inoculation were not derived from single colonies on gelatine plates, and yet he unhesitatingly accepts the inoculations of Billings as bridging over this gap, although we search in vain through Billings' report for any evidence that his inoculation material was obtained from plate cultures. It should also be remembered that it is very evident from the communication of Schütz on the *Schweineseuche* of Germany, which appeared about the same time as our report for 1885, that plate cultures were not used for obtaining the virus with which his inoculations were made. And yet his conclusions have not been contested either by Frosch or others. When his attention was called to this by Dr. Smith, Frosch contented himself by characterizing the allusion to Schütz as "wholly unjustifiable" without troubling himself to go into particulars. As the cases were in every respect parallel the unbiased reader must continue to wonder what subtle distinction was conjured up by the fertile imagination of the German investigator.

"Again," Frosch says in reply to Smith, "after the determination of the identity with Salmon's hog cholera bacterium I was compelled, in testing the chief question of the pathogenic nature of this bacterium for pigs, for which exeriments of my own were not possible, to base myself upon the statements of F. Billings. For this Mr. Smith must blame himself, since, I regret to have to repeat it, the methods and experiments laid down in the reports of the Bureau of Animal Industry for the years 1885 to 1888 did not in a desirable manner come up to the standards in the determination of a new infectious disease. I need not make myself guilty of a repetition of that which has been said in my article, since Mr. Smith agrees with me in this regard with reference to the report of 1885. On the other hand, even a superficial examination of the other mentioned reports shows that Koch's methods were not applied exclusively or exactly, although this was unconditionally demanded by the creation of a second infectious agent of swine plague which appears at the same time and is so closely related to it."

The query which naturally suggests itself here is, if an exact and exclusive application of Koch's method was required to make the Bureau investigations acceptable to Frosch, why was not a similar application of Koch's method necessary to make Billings' investigations acceptable to him? He makes two objections to our inoculation experiments, first, that the virus was not obtained from plate cultures, and, second, that the control animals in some cases died as soon, or even sooner, than the inoculated ones. This last objection should carry but little weight because, as pointed out by Smith, an inspection of the records shows in every case where the controls died at the same time, or earlier than the experimental animals, that this was accounted for by the disease being of a more acute type.

When we analyze the report of Billings we find that what Frosch calls extensive and valuable experiments consist in 33 pigs all told which were inoculated, and two which were fed. Of the 33 inoculated at different times it is stated that two died, that three were killed for examination, and that "the same general results occurred" with six others as with one of those that were killed. The two that were fed died. There is not a particle of evidence that the virus used in any of these cases was obtained from plate cultures, and control animals did not complicate results for the very good reason that there were none in any of the experiments?

It surely is not necessary for me to dwell at greater length upon Frosch's bias in Billings' favor and the unaccountable conclusions to which this led him. But these are minor points which should not lead us to undervalue his contribution to this subject when considered as a whole. The serious thing to us is that it was these details in his statements—details based upon the flimsiest foundation, which attracted the attention of the Committee on Intelligence and Education, blinding the members to the real facts of value which were brought out by Frosch, and leading them to denounce in unmeasured terms the investigations of the Bureau of Animal Industry and all individuals connected with them.

It may be remarked here that no one can steal a discovery from another by objecting to the methods by which that discovery was made. Koch's early investigations of the anthrax bacillus were made by methods which would certainly be considered very objectionable from the standpoint of to-day, but his demonstration of the etiological relation of the bacillus to the disease cannot be taken from him on that account. And so when a germ is isolated and described as carefully as was the hog cholera bacillus by the Bureau of Animal Industry, when its effects on various animals and its biologic characters are made known, the investigators ought not and cannot be cheated ought of due credit when their conclusions are confirmed by competent scientists. The value of investigations is shown by their fruits; and, if the conclusions are proved to be correct, the methods may in the end turn out to be as satisfactory as those used by that other class of investigators whose chief object in life is to assail and embarrass the workers who are building up science and advancing the interests of their profession.

We will now turn to Frosch's report and see what there is of importance which sustains or conflicts with the reports of the Bureau. His most important conclusion is that "the bacterium of Salmon's hog cholera and that of Billings' swine plague are identical and that the same is to be looked upon as the cause of the American swine plague." That is to say, the bacterium sent to Koch by Billings in 1889 was identical with the hog cholera bacterium described in the Bureau reports for 1885 and 1886.

There was nothing unexpected in this conclusion, for we already knew from the report of the Commission of Inquiry appointed by the Department of Agriculture, and from the investigations of Prof. Welch, of Johns-Hopkins University, that Billings at this period had adopted our hog cholera germ as the cause of his swine plague. The surprise came when Billings placed our hog cholera germ into the hands of the commission as the cause of his swine plague, after he had so long denied the existence of that germ.

If we assume for the present, notwithstanding the denials in his report, that this writer had been working with the hog cholera germ during the first two years of his investigations, that is from July, 1886, to July, 1888, then it becomes a point of great interest to learn whether Frosch was able to identify the germ from our description. If he could not then there might be some excuse for Billings' frequent denials of its existence. It should be remembered that the Commission of Inquiry and Prof. Welch had both expressed their conclusion that our description was correct and sufficient for the identification of the germ. Now what does Frosch say?

He says: "We will hence briefly review Salmon's statements bearing in this direction, in order to prove how far the same correspond, free from objection, with the criteria set up by Koch for an infection cause.

"If the reports of Salmon concerning the hog cholera bacterium are next viewed from this standpoint, then a sufficient characterization, morphologic as well as biologic, of the same is given which allows no doubt to arise concerning its identity."

Again he writes: "A culture of this hog cholera germ was the object of a short confirmatory examination in the Hygienic Institute, of Berlin, in the year 1888, by v. Esmarch, and in this it could be determined that the same answered in the main with Salmon's statements, as also that this bacterium corresponded with no cause of infection in pigs known [in Europe, D. E. S.] at that time."

How does it happen that unequivocal statements like this —on points of prime importance—should have been passed over in silence by the Committee on Intelligence and Education, while every effort was made to give the impression that the Bureau reports had been shown to be unreliable?

At the meeting of this Association in Baltimore in 1888, I read an extract from a letter received by me from Koch, in which was given the results of von Esmarch's examination of the culture of hog cholera germs which I had sent to Koch for his opinion. Billings quotes from that letter in his report, and his remarks on it show how completely wrong he was on the whole subject at that time. This is what he says:

"What does Koch's evidence show?

"Nothing but that some unknown germ was sent him that had some kind of effect on 'mice and guinea pigs,' but not that it had any on hogs. It does show that it does not occur in any swine disease known to him as occurring in Europe, and all the evidence quoted by me goes to show that the so-called swine plagues there are one and the same with that in this country, except the *Wildseuche* and *Rouget*. (L. c. p. 246.)

Again, he writes in the same connection:

"Has Mr. Salmon given a particle of evidence showing that this germ produces a single lesion, or does a single thing that that of swine plague does not?

"Then, reader, what is it?

"I will answer for you: An imposition!

"Not content with giving such condemnatory evidence against himself, Mr. Salmon has gone so far as to pile it up so high that his eventual crushing into a worse specimen of nonentity than his 'hog cholera' psychosis is but a question of time. He has done this by sending a lot of cultures of his 'nonentity' to European investigators, all of whom say that they have never met with it, and that it does not occur in any case of swine plague known to them in their respective countries. They certainly 'settle the question' that there is no pathogenic germ known to them, and I think the question has also been sufficiently settled that the real swine plague, with its one ovoid, belted germ, is either known to them all, or that there is evidence that it exists in their respective countries, except the at present somewhat peculiar character of the testimony from Sweden and Denmark with regard to the microorganism, of which I have no fears that the little inconsistencies will eventually be cleared up."

The time has come when all of these little inconsistencies have been cleared up, but not in the way that Billings anticipated. After reading that von Esmarch found the germ to answer our description, and that Frosch finds that description so complete that no doubt can arise concerning its identity, and that this germ is the cause of the American swine disease, what can be our opinion of Billings' contention? And above all, what are we to think of the Committee on Intelligence and Education, who demand that when the statements of the Bureau conflict with the results of men like Billings they must be confirmed by independent investigators before any dependence is placed upon them?

I have not space to go into details concerning the many points of resemblance found in the description of the hog cholera germ given by Frosch and in the description contained in the Bureau reports for 1885 and 1886. I will, however, enumerate the principal ones. The form and dimensions are given as exactly the same, 1.2 to 1.5 μ long by .6 μ in breadth, both stating that they are liable to variation under different conditions. Both state that they are found in the blood and tissues, oftener in pairs than single; that while they stain readily by the usual solutions of aniline substances, the staining by Gram's method is unsuccessful; that they are actively motile in fresh cultures; that they grow upon the acid surface of the potato; that they do not liquefy gelatine, and that the gelatine colonies are brownish disks, often having a dark center which makes them resemble a nucleated cell; that they grow upon the usual culture media in both room and incubator temperatures, presenting in each case the same appearance; that the time between inoculation and death is longer than with other septicæmic diseases; that in small animals it causes but slight local reaction; that mice, rabbits and guinea-pigs were very susceptible, while pigeons require a dose of about 1 cc. to produce fatal results, and chickens are insusceptible; that in pigeons the pectoral muscle, on the side of the inoculation, assumes a parboiled or cooked appearance, while in inoculated mice and rabbits the liver becomes enlarged and presents numerous foci of coagulation necrosis.

In addition to the above, each author has mentioned some points which he considered of value, but taking simply the points which harmonize, we have a picture which clearly differentiates this germ from any other known micro-organism, and which is amply sufficient for its identification. Frosch, himself, says after giving the results of his examination of the culture sent by Billings: "If one now compares these results with the description of the Salmon hog cholera bacterium, then such a similarity of the two bacteria in the main points of morphology and biology is found that their identity cannot be doubted, and it would be superfluous to again enter more closely upon the individual points in which they correspond."

If Frosch is correct in this opinion, and no one who has examined the question can have a reasonable doubt, and if Billings had in 1888 the same germ which he sent to Koch in 1889, what can be his justification for denying the existence of the hog cholera germ described in the Bureau reports? Upon this supposition does not his own report make him out a bungler as an investigator, and an ignoramus in bacteriology.

Billings is now willing to have it assumed that he was working with the hog cholera germ from 1886 to 1888, and by so doing puts himself in a position where such unenviable charges naturally suggest themselves in connection with his work, because he finds even this embarrassment preferable to the other horn of the dilemma. I do not see how it can be admitted that the germ which he then described was the hog cholera germ.

If his plate on page 104 of his report and fig. 3, plate 3, at the end of that work are examined, it will be evident that they do not represent the hog cholera germ, but rather that of the German swine plague. He insists in the text that this is the case, for he says: "We have thus described the normal, or general, cycle of development of the micro etiological organism of the swine plague, the '*wildseuche*,' and hen cholera, as well as rabbit septicæmia, Texas fever, and yellow fever, all of which diseases are caused by a member of this class of 'belted' germs, and should be classed as extra-organismal, local, or land, septicæmia." (L. c. p. 113.)

Again, he says: "This concludes my observations of the micro-morpho-biological phases presented by these micro-etiological organisms in the course of their development." (L. c. p. 114.)

Without stopping to discuss the nature of the micro-organisms of Texas fever and yellow fever, it may now be asserted, even on the authority of Frosch, that if Billings was describing the micro-morpho-biological phases of the germs of *wildseuche*, hen cholera and rabbit septicæmia, he was not describing those of the hog cholera germ because the latter is an entirely different micro-organism.

It surely is not necessary for me to quote extensively to prove that throughout Billings' report he repeats the statement again and again that the germ of his swine plague was morphologically identical with the germ of *Schweineseuche*. The idea runs parallel with and is equally prominent with his other conclusion, that no such germ as the hog cholera bacterium could be found in the American swine plague. In one place he says: "I emphatically declare that all Salmon's assertions in regard to the specific microscopical appearances of any true and specific micro-organism in connection with hog cholera to be one continual series of 'unfounded statements' down to the issue of his report of 1886." (L. c. p. 68.)

And again, "It matters nothing to the hog-raisers of the United States whether this germ was discovered by me on July 7th, 1886, or by Salmon on July 1, or even in 1884." (L. c. p. 69).

Another remark is even plainer, as follows: "Can anyone comprehend what could have induced Mr. Salmon to say (of the true swine plague germ, but which he falsly asserts to be the cause of a 'chronic pneumonia,' report 1886), it is probably identical with the micrococcus described in my report of 1884, etc." (L. c. p. 392).

We see by the quotations which have been made that he not only considered the germ which he then had as identical with the *Schweineseuche* germ, but that he accepted the descriptions of the Bureau swine plague germ as applying to the germ described in his report. While he held that there was but one swine plague in the United States, he insisted that this was caused by an organism morphologically identical with the micro-organisms of *Schweineseuche*, hen cholera, rabbit septicæmia and the Bureau swine plague (see also l. c. pp. 293 and 332), and he denied the existence of a disease produced by the hog cholera germ.

Now what was the effect of Frosch's report upon this position? Billings and the Committee on Intelligence and Education claim it as an endorsement, and if we accept it as such, the query suggests itself, How many such endorsements can a writer have and survive? Billings and Frosch claim that there is but one swine disease in this country which should be called a plague—the former says it is caused by the

Schweineseuche germ, the latter says it is caused by the hog cholera germ. Billings says there is no disease produced by the hog cholera germ in the United States—Frosch says there is none caused by the swine plague germ. This certainly is one of the mose remarkable endorsements on record.

With this condition of affairs before us, we must inquire whether it is not possible that Billings had the hog cholera germ in his cultures previous to 1889 as well as after that date. Do not these germs resemble each other so closely that a bacteriologist might be excused for thinking he had one when he really had the other? So far from this being the case, these two germs are radically different, and any bacteriologist who confessed his inability to distinguish between them after studying them for two years would certainly lose his reputation.

Frosch finds no difficulty in pointing out the most radical differences, although he evidently tries to let his friend Billings· down as easily as possible. He shows that the hog cholera bacterium is motile and bears flagella, while the swine plague bacterium has no power of movement and no flagella; the former grows at the extremes of temperature of 8° C. and 42° C., the latter has no growth at either of these extremes; the growth of the latter upon gelatine and blood serum is much finer, more delicate and more clinging; the former in liquid cultures forms in twenty-four hours an equal turbidity and later a sediment, while with the latter there is only a slow growth found upon the bottom of the tube always in flakes adhering to each other; in gelatine the colonies along the needle track with the swine plague bacterium are much finer and the surface growth more delicate, and on plates the colonies do not reach half the size of hog cholera; the swine plague only grew on potato when the latter was alkaline, and as it is usual for boiled potatoes to have an acid reaction, the germ would not grow upon them while the hog cholera grew abundantly when they were acid; the hog cholera growth on potato was always luxuriant, and of a dirty, light-yellow color, that of swine plague (on alkaline potato) formed flat, not very extensive, gray or yellowish-gray fields. The hog cholera grows better without oxygen than the swine plague, and in general the former has a greater growth energy. Agar tubes colored with lacmoid and sulph-indigotate of soda were discolored by the hog cholera germ, while those with litmus remained unchanged; with the swine plague the litmus and indigo tubes were unchanged, but the lacmoid was slightly discolored. The swine plague germs produce phenol and indol during their growth, the hog cholera neither of these bodies; while the size is variable the latter in general produces coarser forms.

Guinea pigs have a certain power of resistance to the swine plague, but are exceedingly susceptible to the hog cholera; the reverse is true concerning the susceptibility of pigeons. In all susceptible animals death occurs from two to three days sooner after inoculation with swine plague than with hog cholera. The local reaction is as insignificant and trifling for the hog cholera germ as it is remarkable and severe for the swine plague. The hog cholera produces multiple coagulation necrosis in the acini of the liver, while when inoculated with swine plague this organ tends to undergo fatty metamorphosis. Both agree in that they are found in the blood, that they are most numerous in the spleen, and next to this in the glandular, parenchymatous organs, as also in the muscles of the body. They differ in that the blood of the ventricles and auricles, as also that of the main blood vessels, is comparatively poor in hog cholera bacteria, while in acute cases of swine plague these localities are just as rich in bacteria as the above named organs. In hog cholera some of the capillaries are found fully plugged with rod-like bacteria, while in the regions lying between, no bacteria can be observed; the swine plague bacteria on the contrary are evenly distributed in the capillaries, and are never so thick as to cause plugging. Finally, the swine plague germ is found in great numbers, almost in pure cultures, in the inflammatory œdema at the seat of inoculation, as also in the not infrequent exudates in the thoracic and abdominal cavities, while the hog cholera germ is so sparingly present at the seat of inoculation as well as in the small, hardly more than normal amount of fluid in these body cavities, that it can often be detected only with the plate culture method. To these differences enumerated by Frosch, we may add that the hog cholera germ is most frequently seen in pairs when cover-glass preparations from the organs of the affected animals are made, while the swine plague germ under the same conditions is generally single.

I have summarized these points of difference from Frosch's paper in order to ask if it is possible for any bacteriologist to mistake one of these germs for the other after he has studied them in cultures and by inoculating animals with them. And yet to assume such a mistake is the only way in which we can harmonize the germs sent by Billings to Koch, with the description in the former's reports.

I am aware that some of the statements in his reports indicate that the hog cholera germ was under investigation, while others would indicate that it was the swine plague. For intance, the statement that he watched the development of the germs in a hanging drop culture would be absurd applied to he actively-motile hog-cholera germ. Frosch tried to follow him in this, but gave it up as impossible. On the other hand, he luxuriant growths on potatoes which he described could never come from the swine-plague germ. Again, the first culures which he sent to Europe are said by Bunzl-Federn to have developed acidity in milk cultures, and to have formed phenol and indol, which shows them not to have been the hog-cholera germ, while later he undoubtedly sent the hog-holera germ to different investigators. If we accept these arious statements of fact we can only conclude that he at ne time had one germ and at other times the other germ; ndeed this is indicated by his inoculation experiments, in which some of the animals died too soon for death to be aused by the hog.cholera germ, and others after too long a eriod to indicate the swine-plague germ.

It is no task of mine, however, to explain his inconsistenies and contradictions. I should not have taken the trouble o point them out had his work not been held up to this association in connection with Frosch's report, in the attempt o show the report of the Bureau of Animal Industry to be unreliable. I have shown you how Billings' conclusions stand or rather fail to stand, when tried by Frosch's investigations Now let us see how the Bureau's conclusions fare when compared with these and other recent investigations.

In 1885 the Bureau described the germ of hog-cholera— germ so different from any previously described in swin diseases, that for a long time our conclusions were no accepted as correct by any other investigators. In 1886, soo after Schutz's report appeared, we showed that the germ o hog-cholera was essentially different from that of the Germa *Schweineseuche*, and that we had another disease with germ which appeared to be identical with the germ o *Schweineseuche*. It is unnecessary at this time to go int particulars as to how these conclusions have been contested both at home and abroad; but, fortunately, they are now bot vindicated by independent investigators.

As to the hog-cholera germ, its pathogenic character an difference from the *Schweineseuche* germ we need no furthe evidence than is given by Frosch. The latter, however, ha seen fit to contest the specific and pathogenic character of ou swine-plague germ, particularly as related to a plague o equal distribution with hog-cholera. This opinion of his i not founded on any investigations of his own, but upon captious criticisms of our methods. It may be said in the firs place that we never claimed that swine-plague had an equa distribution with hog-cholera. This was a question whic could only be decided by more extensive investigations tha we have been able to make. We did say that it was a widespread plague, and we see no reason to change our views.

As to whether Frosch was right in his assumption that th swine plague germ discovered by us was not the cause of specific disease distinct from hog.cholera, we must decide b the results obtained by other investigators. The Commissio of Inquiry recognized the existence of such a disease; Welch of Johns-Hopkins University, has studied it; Jeffries had undoubted cases of it; and even Billings, after first accepting i as identical with his swine-plague, and later denying its existence, comes around finally and admits that he has seen few cases.

One of the most satisfactory studies of the question is that made by Afanassieff at the request of Baumgarten. It will be remembered that the latter, judging from Billings' reports, had stated his belief that there was but one swine-plague to be considered as existing in this country, and that this was identical with the German *Schweineseuche*. The result of the studies of Afanassieff is a complete confirmation of the reports of the Bureau. Not only does he confirm Frosch, in showing that the Billings swine-plague germ, as at present sent out, is identical with our hog-cholera germ, and different from the *Schweineseuche*, but he finds that our swine-plague germ is practically identical with the *Schweinesuche*, as we concluded six years ago.

The whole subject of the characteristics and pathogenic effects of the hog-cholera and swine-plague germs may now be regarded as cleared up by the investigations of independent workers in Europe. For years Billings, supported by others who should have known better, succeeded in keeping up doubts as to the facts, and particularly as to the correctness of the Bureau reports. For our part we have patiently waited until independent workers should take up the subject and settle it by laboratory researches instead of by polemical writings. We had a long time to wait, but our work is now confirmed on all sides, and our Nebraska antagonist is left between the two horns of a dilemma, either of which is fatal to his pretensions as a bacteriologist.

So much for the fundamental questions involved. But since our Committee tells us that " work which is recognized as valuable abroad cannot be ignored at home," it will be interesting to briefly examine some of the collateral issues which have been raised. In his report, from which I have already quoted, Billings writes :

" The interesting question now is, What kind of an organism is Mr. Salmon sending round as the ' specific microbe of hog-cholera ?'

" It shows a singular want of scientific exactness that Rietsch, of Marseilles, who had it while making his investigations, does not give any description of this thing. It has been absolutely impossible for me to get any culture of this organism, but last summer Dr. Detmers sent me a slide marked as follows : ‘ Bacterium Salmonidi,’ on one label, and on the other, ‘ Doctor B. Persh, culture in gelatine, 10, 24, ‘86.’ This organism bears no relation to anything described by Mr. Salmon, either as to the germ of swine-plague in ’85. or of his hog cholera in ’86, except perhaps in outline morphology ; it is a small, ovoid organism, about three times as long as wide, and has rounded ends, but colors, or is colored entirely, and it does not seem as if the tinction had been too strongly applied. Sometimes, when in process of fission, there does seem to be a very slight clear space in the middle of the body, but in no way does it resemble Mr. Salmon’s description or plates, with the exception of the very latest, where the ends do color somewhat.

“ Is this Mr. Salmon’s ‘ hog-cholera ’ bacterium ?

“ As to that I know not, but I will permit Dr. Detmers to tell his own story about it.”

This is very peculiar writing for a bacteriologist. The organism, he says, bears no relation to anything described by me, except perhaps in outline morphology. In what other respect would he expect a resemblance in a mounted preparation of germs ? We certainly have had very little information from any writer as to the internal structure of bacteria. What he means, no doubt, is that the staining did not correspond with the description in the Bureau reports. It should be remembered, however, that that description was expressly stated to apply to the germs as stained in cover-glass preparations from the blood and organs of affected animals. Our photographs of stained germs from cultures, given in the report for 1886, show the germ solidly stained.

It is certainly well known to every bacteriologist that germs of the same species, grown in different media, vary morphologically, and, therefore, if a description is to be verified the conditions must be the same. The typical preparations, showing the end staining of the swine-plague germs and the unstained middle belt, are most reliably obtained from the blood and other tissues of affected animals. To nake a comparison, the hog-cholera germs should be obained from the same source.

The first thing that strikes one in staining such preparaions is that the swine-plague germ still shows its peculiar taining perfectly when kept in the coloring liquid a length of time that would make the hog-cholera germ a uniform olor throughout. Consequently, in staining the latter germ nore discretion must be used to obtain its typical appearance. The typical appearance is much more difficult to obtain with he organisms which have been grown in various culture media, s the tendency to produce a uniform color is much stronger. f, therefore, the germs sent to Billings by Detmers were colored entirely, that is the proper and only possible indication hat the "tinction" had been too strongly applied. He goes o far as to admit, however, that "sometimes there does seem o be a very slight clear space in the middle of the body," ut he is careful to add that "in no way does it resemble Mr. Salmon's description or plates." It would have been intersting if he had pointed out how a clear space could exist in he middle of a germ, and still not resemble in any way anther clear space located in the same position in another erm.

(*To be continued.*)

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. y recording his observations he adds to the knowledge of his profession, and assists his facts in building up the solid edifice of pathological science."—VETERINARY ECORD.

OPERATION FOR VENTRAL HERNIA.

GEO. TOWNSEND, D.V.S., New Glaupon, N. S.

The case I wish to report was that of a four-year-old mare ith a large rupture in the left lumbar region. I operated n November 4th, 1892, at St. Peters, C. B. My patient had een stalled a year previous; on manipulation the intestine ould be returned easily, as the opening in the abdominal wall was about an inch in diameter. I suggested an operation to the owner, but advised not to have it done, he, however, insisted, and I operated with, I think, favorable results.

My line of operation was: I cast the animal; removed hair over injury, washed antiseptically; made an incision over the opening about six inches long, through the skin and muscles on to the sac; dissected this a little back on either side of the sac over the opening; cut down on the sac, and removed it so as to bring the edges together; I scarified the edges of the opening in the wall; passed cat-gut sutures through the wall of the old wound, taking up the edges of the sac, sewing it together; in this way closing it up. I then sutured up the muscles and skin, leaving an opening at the bottom for drainage, and the ends of the sutures of the inside wound, which I had left long, to also pass through. I then put on a large bandage with pad over site, which was kept on some time, and the horse tied short to keep standing; fed on bran, mash and gruel. I started for home in the morning, and left the patient in the hands of a medical friend who wrote to me December 6th, 1892, saying the wound had healed up, and that he considered the rupture cured. One thing I was careful about throughout the operation, and that was to do everything strictly antiseptically. I never operated on a ventral hernia before, and my object in reporting this case is for the younger members of this profession who, like myself, may hesitate in doing an operation of this kind.

VARIOLA VACCINÆ.

By J. McBirney, D.V.M., Charles City, Iowa.

Thinking the following may be of some moment to the readers of the Review I will present a brief history of an outbreak of true variola vaccinæ among a herd in the county in which I reside.

Dr. I. W. Smith, a family physician, informed me that he had been called upon to treat a very annoying sore on the wrist of a patient, adding that to all appearances the sore was a well-defined pock. It was larger than those usually resulting from the ordinary method of vaccination. I accompanied Dr. Smith to the home of the patient, who lived on a small farm some two or three miles distant, and on making a survey of the premises discovered that five cows milked by the patients were affected. Their teats were more or less covered with pocks in the various stages of development.

To substantiate the diagnosis we determined to inoculate young heifers in perfect health and not giving milk. As further evidence, samples of the lymph were sent to the surgeon-general of the army and Dr. Martin & Son, of Boston. The former returned the material, stating that he had no facilities for making tests; the latter, however, used the material with results that proved it to be the lymph of true variola vaccinæ, and with the written statement were enclosed a few points prepared for vaccinating purposes.

After a lapse of ten days we again visited the farm to observe the results of our experiment. Every abraded surface had responded, and the injected lymph had produced pocks identical with those on the teats of the cows excepting that the crusts were not so well organized. Pimples, vesicles and pustules were well defined.

QUININE IN PNEUMONIA.

By G. Hess, M.D., D.V.S., Ashland, O.

In your last issue I was much gratified to note the earnest desire for the members of the veterinary profession to contribute more liberally in the reports of cases. For us there is no other part of the Review so interesting as that given to these reports. While we appreciate the results of investigation reported in foreign periodicals, we do not feel that interest, pride and stimulus that would characterize reports from our own country. We admit that with many others we are not much devoted to literary pursuits, but with the assurance that our efforts will not be entirely ignored, we should at least make an effort.

Our report will be devoted to the use of quinine as an antipyretic in pneumonia. The patient was a brown mare five years old. She was taken sick after a severe exposure. A veterinary surgeon was called, and found among other pathological conditions a temperature of 107°. The diagnosis of pleuro-pneumonia was given, and some of the more common antipyretics administered—aconite, belladonna, spirits of ac. tenit., pot. nit. and liq. ammon. acetat., etc., but all without the effect of reducing the temperature more than half a degree. In consultation an unfavorable prognosis was given, as it seemed evident that the animal must die, but large doses of quinine were suggested, and it was tried; five drachms were given in the evening, and the thermometer registered 106° the following morning. The dose was repeated in the morning, and the following day the temperature fell to 102.5°. Tonics and stimulants were then given. The appetite returned, and the animal made a rapid and complete recovery. This was a case of double pleuro-pneumonia.

The second case was a bay gelding five years old, the property of the writer; was noticed to complain slightly, but ate well; temperature 104°; a few doses of aconite, belladonna and nitrous ether soon reduced it to 102½°, when we were called away. Upon our return, ten hours later, the thermometer showed 107½°, with a well marked case of pneumonia. Quinine in four to six-drachm doses once a day soon brought a gradual but permanent reduction of temperature, and complete recovery.

Four other cases might be reported with same result, but these two will serve to show the use of large doses of quinine. We believe it is best to give but one dose in the twenty-four hours, and that about seven hours before the daily maximum temperature. By so doing hyperpyrexia is prevented, and the morning remission of temperature is of longer duration and greater in degree. The use of antipyrine, antifebrine, antikamnia have the effect to lower temperature, but only for a very short period of time, and their depressing effects upon the heart, especially in the advanced stages of this disease, are not to be desired.

EXTRACTS FROM FRENCH JOURNALS.

CARCINOMA OF THE HEART IN THE DOG.

BY M. CADIOT.

A dog whose health had been apparently always good, was noticed to increase largely in bulk and to become dull and sleepy. His appetite became capricious, and he suffered alternately with constipation and diarrhœa. The abdomen was distended by a large collection of fluid; the respiration was short and accelerated, and the pulse was small, varying betweent 90 and 120. The mucous membranes were pale and anæmic. Auscultations revealed an exaggerated respiratory murmur, and percussions gave a normal resonance. The movements of the heart were accelerated and percussion revealed a metallic sound, regular in rhythm but with now and then an intermittency of three or four cardiac contractions. Paracentesis was performed for the relief of the abdominal dropsy, and four liters of clear, limpid, yellowish fluid were extracted. The relief obtained was but temporary and the collection returned after a few days with an œdematous swelling in the region of the heart extending toward the lower part of the neck. A second puncture of the abdomen was then performed but again with but temporary benefit, and after a few days the patient died. At the post-mortem inspection two liters of fluid were found in the abdomen, with also a small quantity in the pleural cavities, but the principal lesion was a tumor, about the size of two fists, developed at the base of the heart and surrounding the large vessels. It was covered by the pleura, and on its lower inferior portion by the pericardium. It was of a rosy color and of a dense and more or less fibrinous consistency, irregularly lobulated and without adhesions to the pulmonary lobes.

Microscopic examination proved it to be of a carcinomatous nature.

A second case was also observed in a bitch six years old, which had been sick for four months previous. When brought for treatment she was very thin and weak; the respiration was difficult and plaintive; percussion revealed a dullness on both sides, and auscultations gave crepitant rales; the beatings of the heart were accelerated and strong. There was abundant ascites, the appetite was fair, and as in the previous case, slight lancocythosis. She was subjected to the same treatment, and the puncture was followed by such a degree of improvement that the owner took her away, but on reaching home she was taken with syncope and died.

At the post mortem, very little fluid was found in the abdomen, but the liver was very much enlarged, weighing two and a half pounds, and being filled with cancerous centers of various sizes, some having a whitish and others a pale greyish color. The lungs, the kidneys and the mesentery were also full of very small, greyish neoplastic deposits, but none were found in the intestines. The heart was the seat of a very interesting lesion. The pericardium was adhered to it, and when torn from it the surface of the organ was found to be roughened by the presence of a great number of small tumors. Its general color was greyish and in some places it showed ecchymotic spots, and in others yellowish centers. The ventricles, when incised and the internal surface exposed, were seen to be also covered with the same neoplasms, and the mitral valve also had several. The histology of the pulmonary and cardiac tumors proved the case to be one of generalized encephalon cancer.—*Recueil de Med. Vet.*

INTESTINAL OBSTRUCTIONS DUE TO AN OVARIAN CYST WEIGHING OVER TWENTY-FIVE POUNDS.

By M. Debrade.

A mare aged 12 years was attacked with violent colics and though she was well taken care of and well fed, had for some time lost flesh, become disinclined to work and had lost her usual spirit. She had three times recently suffered from attacks of colic. Supposing her case to be one of simple indigestion, she received the treatment usual in such cases, but without benefit and continued to get worse, suffering great pain, her colics being very violent. At such times she would make strong efforts of defecation, but which were ineffectual, although aided by numerous rectal injections and doses of purgative medicines. Rectal examination proved that organ to be empty, but the hand when pushed further forward came in contact with a large spheroidal mass situated on the right and in front of the pelvic cavity, directly above the bladder. It was not hard but yielded partially to pressure and gave a sensation of fluctuation. What was its nature? Eserine, pilocarpine, coffee, linseed tea, cathartics and hourly injections proved powerless. The disease continuing for four days without any modification or abatement, and the animal died after a long agony

The result of the post-mortem, made six hours later, was the discovery of a large tumor, free from adhesions to the meseutery or to the intestines, but united to the womb by the broad ligament. It occupied the place of the missing right ovary, the seat of which had been usurped by this enormous cyst, and the broad ligament at the point of attachment had become of triple thickness. The growth in its form was quite regularly spherical, and had attained a weight of over 25 pounds, discharging, when punctured, 9 quarts of a thick, reddish-brown, odorless fluid. The walls of the cyst measured about one inch and a half in thickness and were composed of a very strong, fibrous tissue. The left ovary was about three times its natural size, and was thickened and fibrous, and contained in the thickness of its substance five smaller cysts with thin, transparent walls.—(*Ibidem.*)

TREATMENT OF SYNOVIAL, ARTICULAR, OR TENDINOUS WOUNDS BY NITRATE OF SILVER.

By M. L. Ribaud.

Referring to a recovered case recorded by Professor Cadiot under a form of treatment somewhat similar to his own, the author publishes reports of six cases in which he had recourse to the same therapeutics, to which he had, however, applied some modifications.

The treatment recommended by Professor Cadiot consists in the use of thorough antiseptic dressings, with the applications of Van Swieten's solutions, washings, disinfections with bichloride of mercury, and external dressings of iodoform and gauze. M. Ribauld has, according to circumstances, used solutions of corrosive sublimate and nitrate of silver both in powder and in pencil form, applied upon or inside of the wound; blistering embrocations, and in some cases, plain antiseptic dressings.

In the first case, which was one of traumatic arthritis of the knee, he obtained a *recovery* (?) in forty-two days—the animal remaining permanently lame.

In the second case, which was arthritis of the hock, the result was complete recovery in seventy days.

In a third case of similar injury, recovery followed in forty-one days without subsequent lameness.

A fistula of the left temporo-maxillary joint was cured in thirty days.

An opening of the left anterior great sesamoid sheath recovered radically in forty-one days.

His last case was of a similar injury, and recovery occurred in forty-nine days.—(*Ibidem.*)

EXTRACTS FROM ITALIAN PAPERS.

SOME CENTRAL NERVOUS LESIONS OF GLANDEROUS ORIGIN.

By M. N. Boschetti.

The author has made autopsies of cases in which he found encephalic lesions which he considered due to the presence of glanders, though it is generally admitted that such a relationship is of very rare occurrence, and has not thus far been recorded.

In a first case, the animal had during life exhibited doubtful symptoms of a glanderous character, the discharge, the cough, the collections of the left sinuses and other signs obtained by auscultations and percussions, making it one of a very suspicious character. Yet the inoculation of dogs and guinea-pigs had proved negative. After the slaughter of the animal, the autopsy showed that while the right frontal sinus was healthy, the left contained a caseous mass, which when again cultivated, again gave birth to handsome colonies of the bacilli of glanders, the lungs, the liver and the spleen containing a large number of tubercles. In the nervous centers the meninges were normal, while in the left lateral ventricle a small mass produced a series of smaller nodosites, formed of crystals of cholesterine, while under the microscope exposed a larger quantity of bacilli. The blood of the same subject when examined with the microscope exhibited the specific bacilli of glanders.

In a second autopsy, made upon an animal which had suffered with pulmonary glanders, the lungs were filled with tubercles. In the brain two tumors were found, one in each of the lateral ventricles, that on the right side being as large as a bean and that on the left about the size of an egg. Cholesterine and glanderous bacilli constituted the microscopic structure of these neoplasms.

In a third case, the tumor was found in the lateral ventricle, in the shape of an irregular mass, of the size of a pea. It was soft and friable, and pressure caused an oozing of pus and blood. It was a glanderous tumor in the process of disintegration, as proved by examination with the microscope.—*Il Moderno Zooiatio.*

SUBCUTANEOUS FIRING IN THE TREATMENT OF SPAVIN.

By M. Lorenzo Bottazzi.

The author describes his method of procedure as follows: The animal is thrown on the side of the diseased leg, the hair being cut short over the region, and the parts thoroughly cleansed with an aseptic wash. An incision is then made, four or five centimeters in length, in the direction of the axis of the hock, upon the middle of the tumor, the edges of the wound being kept apart with blunt hooks, and the subcutaneous tissue is dissected, in order to expose the diseased bone. Then one, two or three points of firing are applied upon the exostosis, not in a straight line, but, as more effective, on triangular lines, with the base of the triangle turned upward, and the operation is finished by applying carbolized oil to the wound, followed by an antiseptic dressing; subsequently the parts are washed daily with antiseptic solutions, and sprayed with iodoformed ether. In thirty days the animal may, usually, resume work.—*Ibid.*

INOCULATION OF SWINE WITH ANTHRAX.

By Prof. Perronoito.

Two young pigs received in the subcutaneous cellular tissue of the thigh an injection of carbuncular bacteridia. Five days later, a warm, painful tumor appeared at the point of inoculation, rapidly increasing in size, and death occurred in eight days.

Lesions of anthrax were found at the post-mortem in the muscles, the abdominal cavity, the spleen and the organs of circulation. Cultures made with the abdominal serosity of these pigs were successful, and the inoculation of guinea-pigs with the same serosity kills them in thirty-six hours.—*Giornale di Med. Vet.*

TUBERCULOSIS OF THE TESTICLES IN A BULL.

By the Same.

The subject in this case was a three-year-old bull, which at a meat inspection was seized on suspicion of generalized tuberculosis. Besides the lesions on the pleura, the pericardiums, the peritoneum and the mesentery, the testicles were also involved in the tuberculous process.

The vaginal sac was also covered with tubercles, and the fibrous envelops, as well as the glandular structure of the testicles, showed a great number of tuberculous deposits, some of which were also found along the spermatic cord.

It is pretty certain that the bacilli were ejected with the sperm at the time of copulation.—*Ibid.*

CHRONIC PYETITIS WITH OSSIFICATION.

By M. Generale.

The kidneys which were thus affected were obtained from a steer killed for market purposes. In the right kidney the pelvis was the seat of a chronic inflammation, with its cavity full of pus, and the mucous membrane considerably thickened. A certain number of calculi of various sizes floated in the fluid, and round lobules were affected with interstitial nephritis. The lesions on the left side were much advanced, but very little remaining of the cortical substance of the organ, although it was still surrounded by a considerably thickened envelope. In the pelvis there was a kind of cavity, containing a caseous mass, friable and adherent to the mucous membrane, and here and there in the walls of the pelvis hardened portions were found, resembling bone tissue, and forming a kind of band at the entrance of the water, and preventing the exit of the pus from the cavity of the pelvis.—*l'Ercolani.*

UNIVERSITY OF PENNSYLVANIA.

VETERINARY DEPARTMENT.

CANINE HOSPITAL.

The recently completed hospital for dogs at the University of Pennsylvania was formally opened with a simple service held in the University chapel. Dr. John Marshall, Dean of the veterinary department, presided. Provost Pepper was unable to be present, through illness. The keys of the new hospital were turned over by Joseph E. Gillingham, President of its Board of Managers, to the Trustees of the University, for whom they were received by H. H. Furness, LL. D.

Mr. Gillingham's address was a short one. He made an earnest appeal for funds to enable the department to carry on its good work, and said that during the year 1892, ending on August 31, there had been eighteen hundred and twenty-five domestic animals treated. Dr. Furness, in accepting the keys on behalf of the Board, said:

Whatever else our fair building, with all its beneficient appliances, may effect, we shall all agree, I think, that in this town, hereafter, the language of anger or contempt has lost a favorite phrase. Who, hereafter, with any shadow of regret or malevolence, can say that a fellow creature has gone to the dogs? A ban has been converted into a blessing; an abode of wrath into a delectable retreat.

Moreover, the kindness that is here shown, is of the purest, untainted by any expectation of reward, or even of any audible expression of thanks. Time and money and skill have been, and are to be, here expended, from the most unalloyed, the sublimated, motives of gentleness and tender mercy. There is no hope for us of any good round legacy in the wills of any of our patients; their good will here and now are our only guerdon. Neither can we expect that our sombre labors will be entwined by any mirth from our convalescents; there will be no sound of laughter, not even the merry tale of a wag; our highest hopes are bounded by the wag of a tail. And we have other limitations. If we here foster the nine muses they must perforce be canine; moreover we must blink the temperance question altogether, and at our threshold prohibtion must halt its domineering foot. It cannot be helped. It is inevitable. Wherever there are dogs there must be lickers—and there will be whines, and yet I'll warrant you we'll never have a case of inebriation—but if we should, we'll not throw physic to the dogs; we'll give it to them gently with a spoon.

In this great world of ours there is an infinite tangle of every kind of disposition among men, and doubtless in your appeal for funds you have been, and still will be, met with the harsh objection that, here, money was diverted from its appropriate, nay its legitimate channels, which are the alleviation of human woe. This criticism, with its show of justice, should not dishearten us. There are very many of us to whom the mute appeal of the suffering animal speaks with as much eloquence as the audible cry of human distress, and we must remember how close are the ties of friendship, of love, I had almost said of kinship, which bind, and will bind many of us to the suffering patients within our walls. And surely surely within the shadow of that munificent municipal institution where the pain of the humblest citizen is assuaged, our modest walls may rise, and from that mighty, lavish loaf, these dogs of ours may eat some crumbs which fall from their masers' tables. Moreover, familiar and hackneyed though it be, ve need not be ashamed to bear in our hearts that

He prayeth best who loveth best,
All things, both great and small;
For the same dear God who made us,
He made and loveth all.

No love here bestowed on dumb animals can be wasted.

ACCEPTING THE HOSPITAL.

In the name and on behalf of the Trustees of the Univer-ty of Pennsylvania I accept this gift, and am happy in ac-pting it from hands the most worthy of all others to bestow it. nd this symbolic key unlocks other doors besides those of the nine infirmary. At its turning, the doors of memory unfold nd the shadowy past again becomes real before us; and gain we see the happy hour when the veterinary depart-ent, whereof this canine infirmary is a ward, was founded the late J. B. Lippincott. So quietly, so unostentatiously as the large sum of $20,000 given, that we, his co-trus-es, were scarcely aware of the gift until its presence was vealed in the treasurer's columns. As far as any blare of lf-laudatory trumpets was concerned, the gift was as dumb any of the animals whom it has since blessed. The school, thus called into existence, has been accepted by the family of Mr. Lippincott as a sacred legacy, and a munificent contribution is annually bestowed on it by them. Thrice happy they who can wreathe a father's monument with fresh undying garlands!

There is a second munificent contributor to whom the veterinary school and hospital owe their foundation and continued support, and as I do not see him here among you, I do not hesitate to name him and tell you that it is Mr. Joseph E. Gillingham, the present President of the Board of Managers of the veterinary hospital, who, subsequent to the gift of Mr. Lippincott, and equally as unostentatiously, presented the school with ten thousand dollars, and whose sound, mature wisdom, extended knowledge and unflagging zeal, supplement his open hand in all the best interests of the department. Let me digress here for a minute and recall an incident which redounds to the credit not only of the admirable president just mentioned, but also to the enterprise and skill of our department.

Tuberculin, that strange, unknown, mysterous drug, devised by Professor Koch, of Berlin, was first used in this country experimentally on animals by the Tuberculosis Commission of this veterinary department of our's, and whereof Dr. Zuill was the chairman. It was first used in this country practically on the cattle of the fine herd owned by Mr. Gillingham, and in which he takes so keen and just a pride. After inoculating the whole herd, sixty-six (of course they were the best, ill luck will always have it so) developed those symptoms which, if the drug be true, indicated the presence in the animal of that dread disease, tuberculosis. Here was a prospect before which the stoutest heart might shrink, and be led to palter with the temptation of ignoring the putative tests of an unknown drug, and of saving the animals until they could be respectably sold. But Mr. Gillingham never flinched a hair, but all the sixty-six were incontinently slaughtered, with the melancholy satisfaction of having the diagnosis confirmed in each case at the post-mortem. It it impossible to calculate how far-spreading was the circle of disease which by this really heroic action was at once stamped out. The moral, by the way, which this incident, so tragic and so honorable to our President, points out is the exceeding great need of subjecting, as Dr. Shakespeare suggests, all dairy cattle to this test for tuberculosis. There are not wanting scientific men who maintain that tuberculosis, with all its frightful train, is introduced into the human race directly rom the dairy. In the herd of the State College Agriculural Experiment Station, two cases of tuberculosis were deected by the use of tuberculin by Dr. Pearson, which could be detected in no other way.

But to return from our digression, although nothing which most intimately affects the health and lives of those dearest o us should be deemed a digression, let me tell you that the umber of students in our school this year is ninety-two, an ncrease of nearly fifty per cent. in the past three years—and he course of instruction of the most advanced and the most horough in this country.

A majority of the diseases in horses are those affecting the oof, and this is almost entirely due to defective shoeing. Therefore, practical blacksmithing is taught as part of the ourse, and instruction in this course should be taken, I think, y every man or woman who owns horses.

At the close of the year ending 31st of August, 1892, ighteen hundred and twenty-five animals were treated at he hospital without charge for professional services. We may well hold up our hands in admiration of this most benecent charity. Those horses were the bread-winners of honst, industrious, hard working men, the feeders and clothers f a little circle of children. Without this beneficent hospital many a furrow would have been carved on the brow of care, nd many a little mouth gone supperless to bed. As it is, ith this record of our eighteen hundred cases of free-will fferings of the highest professional skill, all connected with ur veterinary hospital, the surgeons and contributers may ream on Christmas eve of the countless homes to which they ave given the best of Christmas mornings.

And now, in conclusion, let me give you one final sign of the health and activity of this veterinary department. It is painfully in need of funds, for the lack of which we are hampered at every turn. As it is, there is annually a woeful deficit in the hospital. We cry aloud for contributions, and do not let us find that we are appealing to dumb animals. We need more money for the general fund of the hospital, and we need contributions for the endowment of stalls. It is not easy to imagine a charity more real and practical than this.

And now, sir, it devolves on me to recommit this key to your most efficient and most unwearied hands, firm in the belief that no rust or stain will ever gather on its wards, and that under your handling it will be potent to unlock the hearts and pockets of our fellow citizens.

The new hospital is said to be the most complete and efficient of its kind in the world, and the first in this country. It stands at the west of the veterinary hospital. The exterior is of Roman brick, with pebble dashing and redstone trim-and a roof of unfading green slate, the whole presenting a most unique appearance. The building covers an area of 65 by 50 feet. It is two stories high, with a basement, in which is situated the kitchen for cooking the food for the canines. The first floor contains a clinic room, which opens into a larger room, in which will be treated animals affected with non-contagious diseases. On opposite sides of this are the wards for distemper and mange.

The second story is divided into four rooms, which will probably be used as laboratories for original research in veterinary medicine. All the rooms are fitted up with the most complete heating and ventilating appliances. They will be lighted by electricity, and electric fans will keep the air at a suitable temperature. Baths for the dogs are provided, and animals themselves will be kept in iron cages, which will be placed on wheels to permit of easy moving. In addition to the specialists connected with this new branch of the university, there will be a necessary staff to act as superintendent nurses and care-takers.

VETERINARY COLLEGES.

TORONTO VETERINARY COLLEGE.

The December examinations of this successful institution were concluded yesterday, when the following gentlemen passed a successful examination, and received the diploma of the council of the Agricultural and Arts Association of Ontario: Charles W. Baker, London, Ont.; Abraham L. Baum, Shelly, Penn., U. S.; Robert S. Beattie, Markham, Ont.; Eugene D. Block, Buffalo, N. Y., U. S.; El-Vin L. Button, Durand, Mich., U. S.; William S. Cook, Stouffville, Ont.; James F. Cox, Muscatine, Iowa, U. S.; Henry T. Creagan, Decatur, Mich., U. S.; Thomas E. Early, Aylmer, Ont.; William H. Gaddes, Indian Head, N. W. T.; David Glendinning, Belfountain, Ont.; Charles Wesley Gosnell, Ridgetown, Ont.; William E. McCandless, Capac, Mich., U. S.; James H. McLean, Poplar Hill, Ont.; Clyde L. Sawyer, Kankakee, Ill., U. S.; John W. Smelser, Davenport, Ont.; John B. Stevens, Yale, Mich., U. S.; Thomas Stewart, Boness, Scotland; Charles E. Wright, Grenfell, Asia.

The primary examinations resulted as follows:

Anatomy—V. Lathrop, W. J. Morgan, F. L. Phelps.

Materia Medica—W. R. Hunter, J. M. Klinck, W. J. Morgan.

SOCIETY MEETINGS.

NEW JERSEY VETERINARY MEDICAL ASSOCIATION.

This Association held its December meeting at 11.30 Thursday morning, at the City Hotel, New Brunswick. President James C. Dustan, of Morristown, presided, and Secretary W. H. Cooper, of Trenton, kept the minutes. About fifteen members were present when the roll was called. This number was afterwards increased to twenty. The minutes of the last regular meeting were read and approved. Secretary Cooper read his report, in which he made a number of recommendations, with a view of getting the Association out of its present rut. The report was ordered to come up for further discussion. The Secretary was instructed to forward application blanks to certain veterinary surgeons whose names had been suggested.

Dr. Cooper, one of the delegates to the United States Association, at Boston, reported attending the meeting and having had a most excellent time. Numerous instructive papers were read and the delegates were handsomely entertained. There was a feeling that more delegates should have attended from local societies. Mr. F. B. Kilmer, chemist at Johnson & Johnson's, was introduced and invited the members of the Association to visit the establishment of Johnson & Johnson and view the process of manufacturing surgical appliances. The invitation was accepted.

The topic of "Tuberculosis" was discussed to some extent. Dr. W. B. E. Miller; of Camden, who is in the employ of the Agricultural Department at Washington, said that in the first year of his inspection in Philadelphia he had found that about 2½ or 3 per cent. of all the animals inspected had tuberculosis. Since then the percentage has fallen about 1 per cent., not because there was less tuberculosis, but because the farmers and stock raisers recognize it now and do not send animals affected to the market. But there is scarcely a day but that tuberculosis is not found. There is more tuberculosis in South Jersey to the square inch than in any other part of the country he had visited. It exists to a great extent throughout the whole of New Jersey.

Dr. Hunt, of the State Board of Health, thought the disease was abating. It is only abating because the farmers do not send animals so affected to the markets. Dr. Miller instanced the case of diseased animals seized in Camden a few days ago. There were nine; four of which had tuberculosis, one had actina and the other four were free from disease. These cattle had been picked up by the dealer about the country. He also told of visiting a slaughter house in Camden and finding several cases. One of them was the handsomest case of tuberculosis he ever saw. Fifteen cattle were in the herd, and all were killed. Five of them were suffering with tuberculosis. He believed from what he had seen that tuberculosis existed to as great an extent now as ever and it is now high time for the veterinarians of the State to appeal to the Legislature for the passage of a law that would prevent absolutely the placing of the flesh of such cattle and others that have been exposed to tuberculosis, upon the markets.

Dr. Julius Gerth thought that this subject should be under the charge of the State Board of Agriculture instead of the State Board of Health.

Dr. J. W. Hawk, of Newark, spoke upon the subject and said there was no question that the disease was raging throughout the State. He knew of one herd on Orange mountain, the milk from which was being sent to market. In reference to Dr. Gerth's idea, he said the question was how to make the members of the Legislature appreciate the dangers of the situation; and it was doubtful which body would have the most power.

Dr. Miller said at the outset the work was in charge of the Board of Agriculture. The work was done effectively although somewhat expensively, but he believed the cost was one of the best investments the State ever made. He thought the work was best done by the Board of Agriculture. He thought tuberculosis should be classed with pleuro-pneumonia and stamped out in the same way. Dr. Hunt, of the State Board of Health has declared that there is no power to confiscate cattle suffering with tuberculosis, because it was not fully decided whether or not tuberculosis is or is not contagious. He believed and was upheld by leading pathologists that it was communicable to human beings. Dr. Hawk said the question was which Board could get the largest appropriation from the State. It is certain that a diseased animal cannot give wholesome milk. The State Board of Health does not go far enough, it quarantines the cattle but does not order their destruction. Dr. Gerth said Dr. Hunt was a stickler for the technicalities of the law. He said the agriculturists are directly interested in preserving the health of the cattle, the Board of Health only indirectly. Therefore the Board of Agriculture should have the matter in charge.

President Dustan agreed with the remarks already made and thought a committee should be appointed to draft resolutions expressing the opinion of this Association as to the medical action in the matter. Tuberculosis is on the increase in his district.

Dr. Miller invited the members to attend the Sanitary Association at Lakewood to-morrow and Saturday, and said the question of "Tuberculosis" would be discussed on Saturday.

Dr. Gerth said it has been proved that calves from healthy mothers would develop tuberculosis if fed with milk from tuberculosis cows.

On motion a vote was taken as to whether or not the Society should take action on the subject. It was decided that it should.

Dr. Gerth moved that the President appoint a committee of three to draft resolutions on the subject of "Tuberculosis," to be submitted at this meeting for consideration. Dr. Higgins, Dr. Eisenhardt and Dr. Hurley were appointed as such committee.

Letters of regret at being unable to be present were read from Dr. Rush S. Huidekoper, of New York, and Dr. W. Horace Hoskins, of Philadelphia.

The Treasurer's report showed receipts to date of $198.19; expenditures $115.81; balance on hand $82.38.

The question whether or not the members should lubricate their dinners with grape juice was decided in favor of wine by a unanimous vote.

The report of the Secretary was taken up and the recommendations discussed. Dr. Miller opposed the recommendation for a monthly meeting of the Board of Trustees, but favored the recommendation that a Committee on Registration be appointed to see that none but regular veterinarians are registered and permitted to practice. He declared that he knew that men were registered and practicing illegally, and it seemed to be nobody's business to look after it.

The Secretary's report recommending the appointment of committees on Registration, Legislation and Judiciary was adopted. At two o'clock the Society adjourned for dinner and afterward visited the factory of Johnson & Johnson, where the different processes of manufacturing surgical appliances were explained by Mr. Kilmer. The visit proved very interesting to the members of the Association.

The President, upon reassembling, appointed the following committees: Legislation, Dr. Miller, Dr. Hawk, Dr. Higgins, Dr. Cooper, Judge Kilburn. Registration, Dr. Gerth, Dr. Axford, Dr. Brown. Judiciary, Dr. Hawk, Dr. Wittpenn, Dr. Elliott.

Essayists for next meeting, Dr. Gerth, Dr. Elliott, Dr. Eisenhart.

The following were proposed for membership: Dr. William T. I. McLaughlin, Jersey City; Dr. C. E. Anderson, Elizabeth; Dr. J. P. Matthews, Princeton.

The Tuberculosis Committee presented the following, which was read by Dr. Higgins:

Whereas, The disease known as bovine tuberculosis, transmissible to man through the consumption of meat and milk; known also to be increasing among our dairy cattle, causing a serious financial loss to the stock growers and agriculturists of this State, therefore be it

Resolved, That it is the sense of this meeting that proper legislation authorizing the State authorities to co-operate with the United States Bureau of Animal Industries, in eradicating contagious animal diseases is absolutely necessary, especially as to tuberculosis, and that as a matter of policy, the supervision of this work should be transferred to the State Board of Agriculture, said body being directly interested.

The report was unanimously adopted.

President Dustan made a short address, congratulating the Society upon its growth and the good it has already accomplished. He reviewed the rise of the veterinary profession, and claimed that in the scientific treatment of disease and in pathology, the veterinary profession now stood at the head.

The next meeting of the Association was appointed to be held at Trenton.

MASSACHUSETTS VETERINARY ASSOCIATION.

Regular meeting of the Association held Wednesday evening, November 23d, 1892, at 19 Boylston Place, Boston. President L. H. Howard in the chair.

Members present: Drs. Billings, Blackwood, Becket, Emerson, Harrington, Howard, Marshall, Osgood, Winchester, Parker, LaBaw and the Secretary. Honorary member: Dr. Stickney.

Minutes of the last meeting read and accepted, after Dr. Winchester had made the following corrections:

That Dr. Bryden spoke of the outbreak in the spring of 1873 as the "so-called outbreak of spinal meningitis." And also that it was at Dr. Bryden's request that the name of the professor at the Harvard Medical School was withheld from publication, in connection with his remarks on springhalt.

Dr. Osgood reported that the springhalt horse was in such a state two days after our last meeting, that he had him killed and sent to Ward's, with the message that he would like the cord, but through some misunderstanding it was boiled out, and was therefore useless. A few days later, a dog with what appeared to be springhalt was sent to the Harvard Veterinary Hospital. One hind leg was affected. Dr. Osgood sent this dog's cord to Mr. Bolton, of Clark University, instead of the horse's.

Dr. Stickney thought that the dog ought to have had an exostosis on the hock of the lame leg. He had a pointer once himself with exostosis on the hock and springhalt.

Dr. Howard read a letter from Mr. Bolton in reply to one he wrote him asking about the publication of Mr. Bolton's paper on springhalt. Mr. Bolton said that his paper would appear in the January number of the *Journal of Mental and Nervous Diseases.*

Reports of committees.—Committee on resolutions in regard to the new "National Veterinary School," reported through Dr. Winchester, and presented the following resolutions:

Whereas, the members of the Massachusetts Veterinary

Association regret that the Faculty of the recently established Veterinary School in Washington, while professing to have "arranged its curriculum to suit the requirements of modern Veterinary education," should have adopted a short two years' course of study, thereby lowering the standard of veterinary education in this country, and ignoring entirely the unanimous opinion of the profession as expressed at the last annual meeting of the United States Veterinary Medical Association, (Boston, Sept. 1892) and

Whereas, While we recognize the value of the laboratories of the Bureau of Animal Industry in the furtherance of veterinary education, especially if connected with a long term or post-graduate school, it is the opinion of this Association that the establishment of the school as at present constituted is detrimental to the advancement of the veterinary profession and a hindrance to the proper use of the laboratories of the Bureau for good work. Be it therefore

Resolved, That this Association censures the action of the Veterinarians connected with this school who are in the employ of the United States;

That it is of the opinion that neither the best interests of the public nor the profession will be advanced by any such use of the staff or laboratories of the Bureau;

And that a copy of the above resolutions be forwarded to the Honorable the Secretary of Agriculture and others interested in the proper administration of the affairs of the Bureau of Animal Industry.

After remarks by Drs. Billings and Stickney, the resolutions were adopted, on motion of Dr. Billings, seconded by Dr. Emerson.

Moved by Dr. Billings, that copies of the resolutions adopted be sent to the Honorable Secretary of Agriculture, the secretary of the so called school, the *Journal of Comparative Medicine*, the AMERICAN VETERINARY REVIEW, and the U. S. Committee on Agriculture, chairman from the Senate, Hon. A. S. Paddock, chairman from the House, Hon. W. H. Hatch. Seconded by Dr. Winchester. Carried.

The name of Dr. W. M. Balmer balloted upon. Ten votes cast, all in the affirmative. The President therefore declared him elected to membership.

Dr. Osgood thinks that it is a farce to require applicants for membership to present their credentials to the Executive Committee, and that there is no need of its seeing a man's credentials, except we know nothing about him. He thinks the clause in the constitution interferes with men joining, who have their diplomas in frames, and perhaps fifty or one hundred miles away.

Dr. Howard read the clause in the constitution, showing that nothing is said about diploma, but that only the term credentials is used.

Dr. Osgood as chairman of the executive committee, Drs. Emerson and Blackwood, members of the committee agreeing with him, then gave notice that he reported favorably upon the names of Drs. G. B. Foss and S. O. Fowle as applicants for membership, although their diplomas had not been presented to the committee, and that he requires the Secretary to give notice that their names will be voted upon at the next meeting.

Dr. Billings then made a short speech, in which he refuted remarks made by Dr. Salmon about him, made at the meeting of the United States Veterinary Medical Association, in Boston, last September. He also spoke of his work in the West upon Texas fever, *Maladie du Coit*, "Corn Stalk Disease," and summer septicæmia of stock. Concluding, spoke of State and Government veterinary positions, and thought that one reason why they are not filled by better men was that the salaries were so low as only to procure the services of a cheap class of men.

Reports of Cases.—Dr. Blackwood showed specimens of enlarged axillary and cardiac lymphatic glands, from a horse which died, whose symptoms in life were simply tremendous swellings of the neck and chest, some of the glands being as large as kidneys. The subcutaneous cellular tissue of the neck was found to be about one and a half inches thick.

Dr. Stickney remembered once seeing a somewhat similar case which died in less than twenty-four hours after the first appearance, and the same owner had two other cases afterward, but in this instance he thought it might have been due to some defect in the drainage.

Dr. Billings said we have a lot of isolated cases of infectious diseases from bad drainage, etc., that have as yet not even been named.

Meeting then adjourned.

Regular meeting, held at 19 Boylston Place, Boston, Wednesday evening, December 28th, 1892. President L. H. Howard in the chair.

Members present: Drs. Bryden, Blackwood, Emerson, Harrington, Howard, Marshall, Winchester, Parker, LaBaw, Carlton and the Secretary.

Honorary member: Dr. Stickney.

Visitor: Mr. Brown, a student at the Harvard Veterinary School.

Minutes of last meeting read and accepted.

Names of S. O. Fowle, M.D.V. (Harv.), and G. B. Foss, M.D.V. (Harv.), balloted upon for membership. Nine votes were cast, all in the affirmative. The President therefore declared the candidates elected.

The applications of Dr. C. R. Simpson, of Somerville, and Dr. T. W. Shaw, of Springfield, for membership were reported favorably upon by the Executive Committee. Their names were laid upon the table, to be balloted upon at the next regular meeting, under the rules.

Dr. Winchester thinks that the requirements of the Constitution providing for essays at these meetings should be lived up to. The President says that there is no clause in the Constitution providing for essays. They are voluntary contributions. Dr. Winchester says then the fact of our not having any lately must be due to a lack of ardor on the part of the officers of the Association. This accusation is indignantly denied by the officers.

Dr. LaBaw then volunteers a paper for the January meeting upon "Punctured Wounds of the Feet."

Dr. Blackwood offers to read at the February meeting upon "The Destruction of Microbes."

Dr. Parker offers a paper for the March meeting upon "Scouring in Calves."

Dr. Marshall offers a paper for the May meeting upon "The Production of Milk."

Dr. Carlton offers a paper for the meeting of December, 1893, upon "Homeopathy Applied to Veterinary Medicine."

Dr. Winchester then wished to know if the Association had any directions for its members in the Comitia Minora of the United States Veterinary Medical Association at the meeting soon to be held. The members of the Association did not have any special instructions to give at this time.

Dr. Bryden then read a short but interesting paper upon "A Case of Seedy Toe."*

A general discussion followed, taken part in by Drs. Emerson, Winchester, Howard and Marshall. Dr. Winchester brings up the point, is this disease caused by a parasite? Dr. Bryden replies that he thinks the disease appears first, and furnished a favorable field for the development of the parasite.

Moved by Dr. Emerson that the essayist be given a vote of thanks. Seconded by Dr. LaBaw. Carried.

Meeting then adjourned.

AUSTIN PETERS, *Sec'y.*

MAINE VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Maine Veterinary Medical Association was held at the DeWitt House, Lewiston, January 10th, at 3 P.M. President Dr. Bailey in the chair. Members present: Drs. Huntington, Lord, Bailey, Dwinal, Joly and the Secretary. The minutes of the last meeting were read and adopted.

The Committee on By-Laws offered a Constitution and By-Laws which were adopted.

Dr. C. W. Purcell, Biddeford; Dr. F. L. Runell, Orono; Dr. J. H. Goddard, Bath, were elected members.

Dr. Huntington introduced a bill drawn by the Maine

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*Published in this issue of the REVIEW.

Society for Prevention of Cruelty to Animals to be presented at the State Legislature (now in session) to exclude mal-practice, and asking this Association to co-operate with them in urging its passage. This was accepted, and the Secretary instructed to make a number of copies and forward to every member and all regular graduates throughout the State, that they may obtain the signatures of representative and influential men in their several districts.

Moved by Dr. Lord, seconded by Dr. Dwinal, that the Secretary take legal action to procure a charter for this Association.

Moved by Dr. Purcell, seconded by Dr. Joly, that the President appoint a committee to formulate a scale of prices, and submit it at the next meeting. Carried. Committee, Drs. Purcell, Lord, Choate.

Dr. Joly was appointed to prepare a paper and read it at next meeting.

It was voted to hold the next meeting April 5th, 1893, at Waterville. The meeting was then adjourned.

H. H. CHOATE, *Sec'y.*

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

International Committee meeting, held January 20, 1893. Members present, Drs. Huidekoper, Liautard, Williams, Clement, Hoskins and Robertson. Absent, Salmon, Baker, Schwartzkopff and Stickney. Chairman Huidekoper offered a report incorporating a plan for the meeting, and an outline of the proposed invitation to foreign delegates, which were on motion adopted; after which the Committee adjourned.

Committee on Honorary Membership: Members present, Drs. Liautard, Huidekoper and Pearson. A list comprising a quota of three of the leading recognized members of the profession in the different countries of the world, was submitted and, so far as completed, was approved.

Committee on Tuberculosis: Members present, Drs. Clement, Pearson and Peters. After some discussion the following report was adopted for submission to the *Comitia Minora*:

It is proposed to have Dr. Peters treat the subject from a clinical and sanitary standpoint, with the carrying on of feeding and inoculation experiments. Dr. Pearson to treat the subject from a laboratory standpoint, with special reference to the use of Tuberculin as a means of diagnosis and cure, the inoculation of other ptomaines for comparison of results, and the carrying on of feeding experiments. The Chairman to treat the subject from a general standpoint, and to incorporate the reports of the other members verbatim.

Committee of Animal Food: No one being present there was no meeting of said Committee.

At 10 P.M., the *Comitia Minora* convened, Chairman Huidekoper presiding. On roll call, Drs. Williams, Liautard, Huidekoper, Clement, Robertson, Hoskins, Turner and Winchester were present; absent, Drs. Hollingsworth and Stewart. The Secretary read letters and telegrams of regret at their inability to be present, of members Salmon and Baker, of the International Committee, and Hollingsworth and Stewart of the *Comitia Minora*. A resolution, submitted at a former meeting of the *Comitia Minora*, empowering the President to secure the titles and synopses of the essays and papers to be submitted at the International Congress, thirty days before said meeting, in order to furnish to such members of the Association as he may select, that they may prepare themselves to discuss said papers at our meeting, was after some discussion, adopted with but one dissenting vote.

The Secretary's report of his correspondence with Mr. Bonney, manager of the World's Fair Congresses, relative to our International meeting being one of the series of Congresses being planned to be held during the World's Fair within the grounds, was then taken up and discussed. The time of holding said meeting, owing to lack of information, was finally submitted, under a resolution, to a sub-Comnittee of three to be appointed by the President. Said Committee to have power to determine the time of meeting and to report in six weeks. The President appointed as such the following committee: Drs. Withers, Hoskins and Huidekoper.

Chairman Hoskins, of the Publication Committee, reported an estimate on it offered for publication of the same in accordance with the resolution passed at the Boston meeting, which was indorsed by the *Comitia Minora*, and the Publication Committee was directed to proceed with its completion.

A communication as follows was received from the President of the New York Veterinary Medical Society:

The Officers and Comitia Minora of the U. S. Vet. Med. Association.

DEAR SIRS: We beg to inform you that the Officers and Committee of Arrangements of the New York State Veterinary Medical Society have been appointed a Committee and have been empowered to act in conjunction with your Committee in regard to arranging our summer meeting so as to aid in the general plan for reception of visitors at the time of the International Veterinary Congress.

Very respectfully,
R. S. HUIDEKOPER, President,
Jan. 20th, 1893. N. Y. State Vet. Med. Society.

A report of the International Committee was then submitted and after some consideration the report was received and adopted.

The Committee on Honorary Membership submitted a synopsis of the progress of their work, which was approved so far as submitted.

The Committee on Veterinary Education, through Chairman Liautard, desired an expression of opinion as to the scope and topics, etc., to be embraced under the subject which said Committee was to plan for consideration at our Congress. After considerable discussion it was determined that said Committee would continue the plan which they proposed, of confining their work, principally, under the heading of "Schools and Colleges." A report of progress by the Committee on Veterinary Education was approved.

On motion of Dr. Peters, seconded by a member of the profession present, a vote of thanks was accorded to the New York Veterinary Surgeons for the hospitable manner in which they had entertained the members of the various committees who were present from outside of the city, which was unanimously adopted.

The Committe on Tuberculosis, through Chairman Clement, submitted their report, which was received, and their plan indorsed.

A motion was then offered that a committee of three be appointed to act in conjunction with the Illinois, Indiana and Iowa local committees, to complete the local arrangements for the meeting at Chicago. The motion was adopted and the President announced that he would make his appointments at a later date.

Dr. Clement brought up the subject of the need of interpreters for our Congress, which was referred to the International Committee with directions that they provide the same for our meeting.

Chairman Lyman, of the Prize Committee, desired information as to the duties of said committee, which after some discussion ended in the President directing the Secretary to place in the hands of the Chairman a report of all the resolutions, etc., relative to the duties of said committee that appeared in the by-laws and amendments of the Association.

Editors Huidekoper, of the *Journal of Comparative Medicine*, and Liautard, of the AMERICAN VETERINARY REVIEW, offered, in addition to the money prize of the Association for the best paper, silver plate to the value of $50.00 each for a prize paper submitted to the meeting at Chicago under the conditions and rules of our Association governing the same.

Dr. Lyman brought up the subject of the incorporation of our Association, or of making our Association an incorporated body. After some discussion, a motion was made that the Committee appoint a committee of three to consider the advisability of this movement, said committee to report at our next meeting; which was carried, after which a motion to adjourn prevailed. W. HORACE HOSKINS, *Secretary*.

W. L. WILLIAMS, *President*.

SEMI-ANNUAL MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Semi-Annual Meeting of the Illinois State Veterinary Medical Association will take place at the Peoria House, Peoria, Ill., on February 15th, 1893.

S. S. BAKER, *President*.

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

On March 24th the Annual Meeting of the Alumni Association will be held in the lecture room of the American Veterinary College, at 11 A.M. In the evening, after the commencement exercises, the Annual Banquet will be held at Clark's, 22 W. Twenty-third St. We anticipate a large gathering and we hope you will be able to be with us at both the meeting and banquet. Our motto last year was "Nothing succeeds like success," and we had in the neighborhood of 60 covers at the banquet. We want and expect even more than that this time to repeat the good time we had last year. Tickets, four ($4.00) dollars. They can be had from the Secretary, or from Dr. Hammerstein, House Surgeon at the American Veterinary Hospital. Tickets will be mailed on receipt of the money. Covers will be laid only for those who have bought tickets previous to March 24, 1893.

E. B. ACKERMAN, D.V.S., *Secretary.*
Telephone, 553 Bedford. 278 Monroe St., Brooklyn.

ONTARIO VETERINARY ASSOCIATION.

The Annual Meeting of the Ontario Veterinary Association was held in the Ontario Veterinary College, Toronto, Canada, on Thursday, Dec. 22d.

President Macarthur, in his opening address, urged on graduates to attend the meetings of the Association, dwelling on their value in cultivating a kindly feeling generally among members, and the benefit mutually derived from an interchange of ideas.

Among the subjects brought forward, the much disputed cattle dehorning question was discussed, on which Prof. Smith made a few remarks, he having been a member of the Government Commission appointed to investigate.

A resolution was passed that the Association should meet in London, Ontario, in June 1893.

The officers elected for the following year are: John Wende, V.S., Buffalo, N. Y., President; W. H. Burns, V.S., King, Ont., First Vice President; G. L. Robson, V.S., Manchester, Ont., Second Vice President; C. H. Sweetapple, V.S. Toronto, Ont., Secretary; W. Cowan, V.S., Galt, Ont., Treasurer; F. J. Gallanough, V.S., J. F. Quinn, V.S., W. Gibb V.S., W. J. Wilson, V.S., and H. Hopkins, V.S., Directors Messrs. O'Neil and Elliott, Auditors.

Messrs. Wilson, Sen., and O'Neil, were appointed to represent the Association at the Western Fair Association.

Mr. Cowan was appointed delegate to the Central Farmer's Institute.

Prof. Smith, Dr. Duncan and the President were appointed to represent the Association at the International Congress to be held in Chicago.

Messrs. John Wende, W. Cowan and W. Gibb were appointed to read papers at the meeting to be held in London.

A unanimous vote of thanks was tendered to Mr. Macarthur, the retiring President, for his able conduct during his term of office.

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B. T. F. Bromwell, 97 and 99 W. 5th St.,
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AMERICAN VETERINARY REVIEW,

MARCH, 1893.

ORIGINAL ARTICLES.

EPITOME UPON MALLEINE INOCULATIONS.

Translated by Richard Middleton, D.V.S.

The discovery of Robert Koch—that a special extract from a pure culture of tubercle bacillus possessed a specific property when injected into the organism of consumptive animals—has been the incentive to other bacteriological investigators to apply analagous extracts to the eradication of other infectious diseases.

In veterinary medicine, the effete product and protein body of the glanders bacillus first came under consideration; the great similarity between the latter disease and tuberculosis readily leading to the opinion that in this affection such a specific action might be hoped for. The successful application of this conviction was reserved for Kalning[1], of the veterinary institute at Dorpat, Russia. He derived a lymph by consecutive cultures of the malleus bacillus, which induced noticeable symptoms in afflicted animals, but caused no alteration in healthy beings.

This virus, as it may be conveniently designated, was prepared by Kalning in the following manner: Take of the pure culture of glanders bacillus 5 g., add thereto 20 cubic centimeters of sterilized distilled water, placing the mixture in the thermostat regulated to 248° F. for twenty minutes. Within the

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(1) Zur Diagnose des Rotzes. (Archiv. fur Veterinar wissen-schaften Bd. I., April–May, 1891, Petersburg).

course of forty-eight hours the same process was repeated four times; for the following forty-eight hours the clouded liquid remained in a temperature of 102° F. The same was now filtered by the aid of an air pump through a Pasteur filter, yielding at the termination 12 cubic centimeters of a transparent light yellow fluid, which was subjected fifteen minutes to a temperature of 248° F. Two glanderous patients and one artificially inoculated subject received 1 ccm. each of the liquid with the result that in from ten to thirteen hours the rectal temperature advanced 3.6° F. and 4.8° F. above normal; the same dose was administered to two healthy animals without inducing noteworthy increase in body heat.

Most unfortunately the pioneer in these experiments, Kalning, succumbed to an infection of the dreaded disease some weeks later, so that the researches were not perfected. Following Kalning came Preusse[1] and Pearson[2] who experimented in this direction, and who fabricated a lymph by an exclusive process.

Preusse obtained for the preparation of the malleine old, parched and hardened potato cultures of the bacillus, with the idea that these contained the material which stained the tuber a brown or a black—the active substance. These cultures were treated with a fluid composed of equal parts of water and glycerine, and allowed to remain several days in a thermostat at 95° F. He thereby secured by successive filtrations and sterilizations an oleaginous fluid, dark yellow in color and somewhat opaque; neutral or slightly acid in reaction, and of a peculiar odor, containing the pigment of the original cultures, which remained bleached. With this lymph Preusse proceeded with trials, using guinea-pigs afflicted with artificial glanders, also six suspicious horses which manifested no open character of the disease previous to the application.

For purposes of injection he diluted one part of the liquid with ten parts of a two per cent. carbolic solution, using of this to each horse from 1-3 ccm. (1-4.0 g. malleine. Seven and a half

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(1) Versuche mit Rotzlymphe (Mallein). (Berl. Thier. Woch., 1891, No. 29).

(2) Ueber die Wirking des Malleins. (Zeitschr. fur Vet., 1891, No. 5).

hours subsequent to the first, a second inoculation was undertaken, with an increase in the dose to 3.0-5.0 ccm. (4.0-7.0 g. malleine). The operation of the same was highly interesting; five of the horses offered variations in the temperature, which fifteen hours after the first and eight hours after the second application had reached its zenith. The deviation occurred between 2.7° and 3.9° F.; the sixth horse, however, a two-weeks-old foal, manifested an increase, although exceedingly slight, amounting to 0.9° F., which after the last injection became normal.

In addition, each of the first five horses treated exhibited a doughy swelling about six inches in diameter which was painful upon pressure, involving the subcutaneous connective tissue. On the following day the subjects appeared apathetic and drowsy. The sixth, the foal, showed none of these characteristics. On the third day the post-mortem confirmed the suspicions regarding the five adult animals; in short, the malleine had reacted as a developer of otherwise latent dispositions of the glanderous disease.

Preusse next obtained a horse sound in every respect. To this animal he gave the malleine in large doses; in forty-eight hours no abnormal variation of the temperature was discernible, notwithstanding the fact that the same received 1.8 ccm. of the pure lpmph. The autopsy confirmed the action of the virus. Opposed to the foregoing it is to be recorded that Preusse injected 0.5 g. of malleine in an intra-vitam glanderous patient, with the result that in nine to eleven hours the temperature advanced 2.7° F., which, upon repeating the dose, advanced .72° F. further. The "Preusse" lymph has been tried by numerous others, so that the record of the same is most complete. With this lymph Heyne-Posen[1] inoculated twenty-three head, Schillingoppeln[2] nine, Peters and Felisch[3] ten and Dickerhoff[4] and Lothes seventy. Of these one hundred and twelve horses the greater number gave no

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(1) Versuche mit Rotzlymphes (Mallein) bei Pferden. (B. T. W., 1891).

(2) Experimenteller Beitrag zur Verwerthung des Malleins fur Diagnose des Rotzkrankheit. (Ebenda, 1891).

(3) Beitrag zu den Impforosuchen mit Preussescher Rotzlymphe (Mallein) bei Pferden. (Berliner Thierarz Wochenschr., 1891).

(4) Beitrag zur Beurtheilung des Mallein. (Ebenda, 1891, 1892).

infallible sign that the dreaded affection had located within their organism.

In sixty-six of these cases, a reaction followed nine to ten hours after the injection, on an average, in doses of 0.5 g. mallein diluted with 4.5 g. of one per cent. carbolic solution; in the remaining forty-six no appreciable deviation from the normal. An autopsy upon the former revealed sixty three possessing the internal lesions of the affection; in two (Peters and Felisch, Dieckerhoff and Lothes) no pathological change could be noted, despite the most painstaking means. In one (D and L), a formation in the lungs which evidenced in its macroscopical character the glanders nodule, but which when applied to guinea-pigs gave negative results.

The post mortem upon the forty-six animals showing no symptoms, seconded the intra-vitam diagnosis.

In addition to the pyrexia, the afflicted subjects manifested great weakness, immobility of the sensorium, accelerated pulse and respiration with absence of appetite. Structural changes at the point of introduction were not uniform, the commonest lesion being an inflammation of an ephemeral nature which disappeared in the next few days.

Most interesting to note, is the fact that in all of those cases decidedly glanderous the circumscribing pulmonary and splenic tissue arranged itself in a zone of inflammatory quality, with the nodule as the central point.

Dieckerhoff and Lothes instituted further experiments with the object in view of determining the effect of the lymph when used upon horses afflicted with pleuro-pneumonia, rheno-adenitis, chronic inflammation of guttural pouches, sarcoma of same, etc. None of the animals in the trials were affected by the malleine; and no horse, free from malleus, exhibited fever reaction even when receiving three doses of the malleine.

Pearson obtained his malleine by adding salt and glycerine to a bouillon which had flowed over virulent potato cultures; subjecting the same, through fourteen days, to a heat of 97° F. in the thermostat, and again later, for several hours to 176° F. This thickened fluid, after being filtered through baked clay, became perfectly transparent; the same was sterilized by placing for twenty minutes, each day for three days, in a stream of flowing steam. When 0.25 to 2.0 ccm. of this fluid was subcutaneously injected into glanderous guinea-pigs, the body heat advanced in a decided degree, and redness, with swelling adjacent to the inoculation area were observed. In healthy animals the repeated injections produced only a local reaction and insignificant fever.

Since all fluid extracts of bacteria cultures are irregular in their consistency, and especially so regarding the active principle, Foth[1] and Gutzeit[2] have had in view the production of this active substance or essence in a more solidified and substantial form. Foth for this purpose procured three various kinds of malleine, which he distinguished as I, II and III.

Malleine I was prepared as Preusse describes, from potato cultures; malleine II from pepton-agar cultures containing glycerine; malleine III from the glycerine-buillon cultures. By adhering to Koch's method of procuring pure tuberculin, he proceeded with his effort to secure pure malleine. From malleine III there precipitated a yellowish flaky coagulum on the addition of absolute alcohol; by washing several times upon the filter with absolute spirits the same became grayish and unctuous. In the exsiccator, over chloride of lime or sulphuric acid, this product dries to a crumbling, white and spongy mass, which is easily pulverized and soluble in water, being about one-half per cent. of the original fluid. Similar results are secured by using malleine I and II, though the per centum is materially smaller.

This precipitate dried over sulphuric acid has been used by Foth upon field mice and guinea-pigs. Three field mice, which had been inoculated with glanders twenty-four hours previous, received of this powder 2-5 milligrams and succumbed twelve hours after; "control" mice inoculated at the same time and taking none of the powder, died four days after. An exquisite

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(1) Untersuchung ueber die wirksamen Bestandtheile des Malleins. (Zeitsch. fur Veterinarblunde, 1892, No. 3).

(2) Ueber Mallein. (Ebenda 1892, No. 4 und 5)

subject of glanders, a guinea-pig, gave no response upon the administration of 0.01 gramme, but succumbed twenty-four hours after the injection of 0.03 grammes of the powder. Foth believes himself justified in assuming his product to contain at least *some* of the active principle.

Gutzeit has likewise succeeded in attaining similar results. He obtained his malleine from a bouillon culture—made from beef and horse meat with the addition of salt and peptone—maintained fourteen days at 98° F. and over. He now concentrated this gradually over the water bath, filtering it, and at last secured one-quarter of the original quantity; this was of a clear, wine-red color and neutral in reaction.

With this he inoculated ten horses, of which eight manifested an advance of 1.9°-5.2° F. in temperature, which lasted eight to ten hours; the other subjects remained normal.

The former exhibited glanderous lesions upon post mortem; the latter proved to be in a healthy condition. Gutzeit, in experiments upon the relative virulence of antiquated malleine, communicates that a preparation a few weeks old possessed activity, but in a lesser degree.

Finally, Gutzeit made investigations calculated to determine the chemical constitution of his product. By the addition of absolute alcohol, or an alcoholic solution of mercury chloride, he was again successful in securing the active agent in the form of a precipitate. He recovered the same material from the fluids of the glanderous cadaver (guinea-pigs and horses) but not from bouillon. Doses of 0.01 gramme and 0.15 grammes of this dried alcoholic precipitate induced 2.5° and 3.4° F. of pyrexia in all inoculated guinea-pigs and horses.

Gutzeit further eliminated from the alcholic precipitate an effective body whose watery solution produced fever in glanderous guinea-pigs.

In the military veterinary colleges in Berlin, malleine prepared according to Gutzeit—alcoholic precipitate dissolved in water—was used by Engelen and Willach[1] in seven cases, of which six

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(1) Malleinempfungen auf Grube Heintz-Dechen. (Zeitschrift fur Veterinank 1892, No. 6).

responded by an increase of 3.0 to 4.6° F.; the single remaining animal gave no sign of fever. Post mortem confirmed the diagnosis as evidenced through the malleine.

The rectal temperature in these six cases continued long at its abnormal height, assuming very slowly and irregularly its physiological standard, without disturbing the general condition.

Exceedingly valuable are the instructions and tests of Nocard, which will here be exhaustively related. The investigator, in a correspondence to the *Recueil de Medecine Veterinaire*, in April, 1892, defines the application and operation of malleine as prepared by Roux at the Pasteur Institute. This product, under certain limitations, was able to discern glanders when all other diagnostic agencies failed. Nocard emphasizes the importance of always using the same malleine, *i.e.*, a product upon whose infallibility one has informed himself; such a material is to be procured in the following manner:

Through numerous passages it is possible to so augment the virulence of the glanders bacillus that rabbits which usually require months, and white mice which possess, practically, immunity, succumb within thirty hours from the intensity of its propagation and ravages. The bacillus is sown in peptonized glycerine-bouillon (℞ same as tubercle bacillus) and maintained for one month at 95° F.; after the expiration of this time the same is sterilized by subjecting to a torridity of 230° F. Now filter through paper, at a low temperature, in a vacuum in the presence of sulphuric acid, reduce its volume to one-tenth the original.

By this procedure the fabricator is in possession of a syrupy fluid of a peculiar odor and dark brown color, which maintains its freshness for a long period in the glare of the sun. For purposes of application, a mixture of 1.10 carbolic solution (5.1000 water) is used. This is uniform in its effects.

When subcutaneously injected in healthy horses, in doses of ½-1 cubic centimeter, it causes a local œdematous swelling, hot and painful in character, which never suppurates and which subsides in one to two days. Contemporaneously there appears a febrile reaction lasting twelve to fifteen hours, and amounting to an advance of 2.7° 3.6° F.; patient dull, inactive, trembling and without appetite.

When, however, less is injected, ¼ ccm, the effect in sound animals of the equine species is null; local reaction is about or hardly visible, body temperature normal and general health not influenced. On the contrary, the effect upon afflicted horses is noteworthy. Following the ¼ ccm dose is remarked a voluminous swelling at the point of injection, which is œdematous, painful and warm, seldom suppurating. Animal dejected, trembling and breathing more rapid than in health. Temperature soon reaches an increase of 4.0° F., arriving at its maximum at the tenth hour, after which it retreats somewhat, previous to remaining twenty-four to forty-eight hours at an advance above normal. Alterations in the pulse occur as the temperature varies.

Nocard handled forty-eight horses with malleine, of which thirty-four proved to be glanderous. In these the temperature advanced 3.0°-5.0° F. Of the fourteen not affected only four manifested a deviation, insignificant in amount—1.8°F.; these were suffering respectively from bronchitis, chronic swelling of the submaxillary gland of unknown nature, and melanosis.

He came to the conclusion, therefore, that all horses having no abnormality remained unaffected by malleine; while in horses giving a slight increase in body heat, the respiratory tract was invariably the seat of some lesion.

The following is instanced to illustrate how trifling the circumstance necessary to cause a variation: A horse which presented a slight enlargement of the submaxillary gland had been inoculated three times with the lymph, each time varying more than 1.0° F. from normal. After excision of the gland (cultures of the same having failed of operation) the animal was subjected to a fourth injection, upon which the temperature did not vary.

Another case, which had stood adjacent to a glanderous patient, was declared by Nocard to be itself affected, to the astonishment of other veterinarians. The autopsy and lymph corroborated his affirmation.

Finally, the malleine, so prepared, rendered cases of occult glanders patent, even when the nasal discharge and glands themselves were inoculated into other animals and failed of results.

Nocard recites other examples of the uniformity of this lymph, and suggests its application upon horses of the army.

He gives directions that when, following malleine injections, the temperature advances beyond 3.6° F., the animal may positively be asserted as glanderous; when, however, the thermometer registers an advance below 1.8° F., there is a possibility of an extraneous cause other than malleus. In all of those cases where the temperature deviates below these two grades, namely 1.8° and 3.6°, the evidence is not conclusive, but the observations should be proceded with.

In a second communication (*Bulletin de la Societe Centrale de Medicine Veterinaire*, 28 April, 1892, *Recueil*, 30 Mai, 1892), Nocard relates another interesting case. The same exhibited induration of the lymph glands and circumscribed areas of hard swellings in the subcutaneous tissue, which were filled with suppurative contents. When the latter pus was inoculated into guinea-pigs and spread upon various soils, the result was negative in so far as propagation of the glanders bacillus was at stake. Nasal discharge absent, and only in the interior of the nose small adhesions of dried mucous were visible.

Subsequent to the malleine administration the temperature increased from 101° F. to 106° F., and the course was a typical one; an immense œdematous, hot and painful swelling was remarked at the point of injection, accompanied by a chill. By repeating the inoculation of the pus from the skin swellings, the result was again void.

A second application of the lymph placed beyond all reasonable shadow of doubt the fact that the horses were glanderous. Nocard, in order to nullify the negative evidence of the guinea-pigs, etc., made a subcutaneous injection of 0.25 pilocarpine, and ordered the subject to be exercised with the idea of increasing the nasal discharge. The serous excretions from the nose he used upon guinea-pigs, and obtained notoriously positive results.

The question here involved had to do with the nature of the pus contained in the cutaneous enlargements. Transplanting of the same upon horses, cattle, goats, etc., showed it to be neither horse-pox, glanders, nor adenitis. As a direct sequence then, from the promises offered, it is to be affirmed that a glanderous horse can fabricate a healthy pus, and that glanders is a progressive disease which depends upon the state in which the virus is incorporated in the blood.

The favorable issue of these experiments, and the importance of the subject, induced the Bureau of Contagious Diseases connected with the Royal College at Munich to formulate similar trials. Assistant Hoflich prepared a lymph as instructed by the foregoing investigators.

A peptonized bouillon made from horse meat, and to which glycerine had been added, was fructified with the glanders bacillus from potato cultures of the first generation. The same was placed in a breeding-oven thermostat, and maintained at 98.6° F. for approximately three weeks. The preparation, which had become opaque, thick and yellowish gray in color from the propagation of the bacillus, was now tested relative to its containing the microbe. Sterilization was accomplished by placing in escaping steam. After percolating through ordinary filter paper and adding a 0.5 per cent. carbolic solution, Hoflich obtained perfectly clear reddish brown liquid of singular odor.

Six guinea-pigs, of which four had been artificially inoculated three weeks previous, were given injections of ½ ccm., to which the same quantity of a 1 per cent. carbolic solution had been added. After five hours the four affected animals, which exhibited tumefaction of the inguinal glands, experienced a rise in temperature which reached its zenith five hours later.

The table explains in detail the variations of temperature:

INOCULATION ON JUNE 23, 1892, 8 O'CLOCK A. M., 0.5g.

MALLEINE.

	8 A.M.	9 A.M.	10 A.M	11 A.M	12 A.M	1 P.M.	2 P.M.	3 P.M.	4 P.M.	5 P.M.	6 P.M.	7 P.M.	8 P.M.	REMAR
Guinea-pig I	37.2c.	37.5	37.0	38.5	38.8	39.1	39.0	39.5	39.7	40.0	40.2	39.6	39.0	Glande
" II	38.4c.	38.0	38.5	38.8	39.0	39.3	39.4	39.3	29.6	39.5	39.6	39.1	38.9	"
" III	38.0c.	37.8	38.2	38.3	38.6	38.9	39.3	39.2	39.5	40.0	39.6	39.2	38.8	"
" IV	37.7c.	37.5	36.9	38.0	38.5	39.1	39.3	40.3	40.4	39.8	39.7	39.5	39.1	"
" V	38.1c.	38.3	38.4	38.0	38.2	38.0	37.5	37.9	38.1	38.2	38.4	38.1	38.5	Free fr Glande
" VI	37.5c.	37.4	37.8	37.6	37.5	37.5	37.4	37.5	37.3	37.5	37.7	37.8	37.8	"

Through the kindness of the district veterinarian at Munich, Höflich had opportunity to try the effectiveness of the lymph upon five horses, three of which were suspected as suffering from being in contact with the other two which were probably glanderous. Each of these patients received 1ccm. of malleine, diluted with 4ccm. of a 1 per cent. acidum carbolicum solution, under the skin upon the left cervical region. Twelve hours later each received subcutaneously 2ccm. upon the right side of the neck.

Tabulated observations upon these animals is given below:

FIRST INJECTION JULY 4, 1892, 8 O'CLOCK P. M., 1 GRAMME MALLEINE.

SECOND INJECTION JULY 5, 1892, 8 O'CLOCK A. M., 2 GRAMMES MALLEINE.

		July 4th.		July 5th.									
I. Five year old black mare.	Pulse.	38	40	44	44	40	46	40	38	40	42	42	44
	Resp.	16	16	18	16	14	15	16	14	20	14	14	16
	Temp.	38.4	38.3	38.2	38.3	38.5	38.4	38.5	38.7	38.6	38.5	38.6	38.8
II. Ten year old chestnut geld.	Pulse.	40	44	40	42	46	50	48	52	50	50	48	48
	Resp.	16	16	18	20	18	22	20	24	20	22	18	20
	Temp.	38.2	38.0	38.1	38.2	38.8	39.2	39.2	39.1	39.4	39.2	39.0	38.9
III. Six year old all brown gld.	Pulse.	40	40	40	42	40	40	44	42	42	40	44	44
	Resp.	14	12	12	12	16	16	16	14	14	12	14	16
	Temp.	37.8	38.5	38.4	38.5	38.2	38.4	38.2	38.1	38.1	38.2	38.7	38.6
IV. Fourteen year old bay.	Pulse.	48	48	48	46	48	48	44	46	46	48	46	48
	Resp.	20	16	20	18	18	16	18	18	18	16	20	22
	Temp.	38.4	38.4	38.3	38.5	38.7	38.3	38.6	38.7	38.6	38.8	38.8	38.7
V. Six year old brown.	Pulse.	44	44	42	40	44	44	44	42	40	42	44	44
	Resp.	16	18	16	16	12	12	14	14	16	18	16	18
	Temp.	38.3	38.1	38.5	38.5	38.4	38.3	38.3	38.2	38.3	38.4	38.6	38.4

On the 13th of July the two probably glanderous animals, Nos. I and II of the table, were given the third injection upon the left shoulder; this was composed of 2ccm. of malleine and 3ccm. of a 1 per cent. carbolic water.

The table below traces its effect:

THIRD INJECTION JULY 13, 1892, 6 O'CLOCK A. M., 2 GRAMMES MALLEINE.

		6 A.M.	8 A.M	10 A.M	12 M.	2 P.M.	4 P.M.	6 P.M.	8 P.M.
I.	Pulse.	40	40	40	38	40	42	42	44
Five year old	Resp.	14	14	12	16	16	14	12	12
black mare.	Temp.	38.0	38.1	38.2	37.9	38.0	38.3	38.3	38.2
II.	Pulse.	36	36	40	33	44	52	56	56
Ten year old	Resp.	16	16	18	20	24	24	22	26
chestnut geld.	Temp.	37.5	37.8	38.1	38.6	39.1	39.4	39.5	39.3

The general health of all of the horses, with the exception of No. II, was not essentially disturbed; only this animal manifested important advance of temperature, respiration and pulse, together with great immobility and anorexia.

The local lesion consisted of an œdematous, hot and painful enlargement at the point of introduction; in the others this was of less importance.

According to the tabulated results it appears that only No. II was suffering from glanders. The autopsy of all the horses was held on the 14th July (excepting No. IV, which was killed on July 9). In I, III, IV and V no lesion of a glanderous nature could be detected despite the most trying investigation. On the other hand, No. II displayed the most conclusive evidence in great abundance—in the right lung a superficial, lobular, pneumonic herd, which upon section showed several small, yellowish tubercles with softening of the center.

Summing the various series of experiments which have been made up to the present time, it may be affirmed that malleine inoculations accomplished the purpose for which they were devised. The practitioner is not in a position to prepare his own lymph, generally speaking, but could, through the experiment stations or public laboratory, secure the lymph.—*Monatschrift f. Thierheilkunde.*

THE DISINFECTING PROPERTIES OF CARBOLIC ACID.*

By Dr. J. A Replogle.

INTRODUCTION.

Disinfectants are at present, and have been ever since the introduction of the germ theory, of vast importance to both the physician and surgeon. So common is their use that no modern surgeon will attempt to dress a wound, or perform an operation without the use of disinfectants. No wound of ulcerating or suppurating condition, or any trouble that may be accompanied with or caused by micro-organisms, is treated without the use of disinfectants.

The physician, as well as the surgeon, finds it necessary to use disinfectants in treating or preventing all specific or contagious diseases.

Without the use of disinfectants nothing would prevent an epidemic, when once started, from passing over an entire continent, and perhaps the entire world, unless the micro-organisms would simply lose their virulence from age and other surrounding conditions. In fact, this class of drugs is altogether indispensable, and more especially so in surgical work where it is absolutely necessary to destroy any organisms that may drop into the wound during operation. But it is a question as to what drug will destroy organisms best with the least possible inconvenience from its use. Hence, I have endeavored to make an investigation of the disinfectant properties of carbolic acid, more especially with reference to disinfecting instruments and wounds.

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*Paper read before the Iowa State Veterinary Medical Society. This paper represents work done in connection with a graduating thesis made under the direction of Dr. W. B. Niles at the Veterinary Department of the Iowa Agricultural College.

HISTORY.

Carbolic acid was discovered in 1834 by Runge, who gave it its first description and named it carbolic acid. Its constituents were first investigated by Laurent, who gave it the name phenol hydrate.

Embalming dead bodies is the earliest illustration of the systematic use of disinfectants; for this purpose carbolic acid was used as early as 1843, by the Egyptians.

In 1847 Runge said: "Carbolic acid would stop decomposition in putrid meat, and if the meat was then dried, would not decompose again," and recommended it for embalming dead bodies.

Prof. Leister, of Edinburgh, was the first to use carbolic acid as a medical agent. In 1860 he said it would stop fermentation depending on an organic ferment. But it was not known at that time how it brought about this change. From 1860 to 1870 but little mention is made of its being used as a medical agent. From 1870 to 1874 it was used by Prof. Leister in dressing wounds and suppurating sores. He then called it an antiseptic because he believed it destroyed the germs that Klebs, at that time, claimed suppuration to be due to. At this time many other doctors began the use of carbolic acid in surgical work, dressing wounds, suppurating sores and in many forms of skin disease. After 1878 its use increased more rapidly until the present time. Its use has become so extensive and the demand so great that the United States consumes 70,000 lbs. annually, more than they can produce.

Thus it is seen that carbolic acid did not come into use as a disinfectant by some sudden discovery through an investigation of its therapeutical properties, but came into use slowly and gradually; first, by noticing its preserving properties, then the so-called healing effect it had on wounds, and along with the development of the germ theory it was found that it would destroy bacteria.

So common is its use at present that no druggist, physician or surgeon is without it. A very large number of the disinfecting preparations are partly composed of carbolic acid. Yet its disinfectant properties are questioned by some of the best modern medical men, some declaring it is not even an antiseptic.

In my experiments with carbolic acid I have endeavored to demonstrate the proper amount of acid present in solution necessary to destroy germs, as well as to demonstrate the fact of its being a disinfectant.

While the conditions in the laboratory are not the same as in disinfecting wounds, it is the only way by which we are able to arrive at a satisfactory conclusion, for in disinfecting wounds we do not know the number of germs present, nor can we estimate the number of germs that survive the action of the acid. But in the method I have employed we are able to approximately estimate the number of germs exposed to the acid, also the number of germs that survive after exposure to the acid, at different lengths of time, which will be seen by the experiments.

There are two general methods of testing a disinfectant.

First: By using cultures dried on silk thread, etc. This is the method Koch used in his early work in testing disinfectants, but as it did not give satisfaction was discarded and is not used at present. But it merits a description.

The threads are cut in short pieces, about an inch in length, and dipped in a solution containing germs, and are then dried, to make the germs adhere to the thread.

Sterilized tubes containing the previously prepared threads are filled with solutions of the disinfectant of different concentrations; with a platinum wire these threads are fished out at the required time, and after removal of the disinfectant placed in culture media. The removal of the disinfectant is effected by washing in sterilized water and pressing between sterilized filter paper. But there are objections to this method. It is hard to remove the disinfectant from the thread sufficiently enough to not inhibit the growth of the organisms that are not destroyed by its action. And we can not estimate the number of germs exposed to the disinfectant nor the number that survive its action.

Second: By use of fluid cultures. This method was used by Geppert and Schafer; but as it did not give satisfaction, soon gave way to the exact dilution method, to be described later.

In this method, equal quantities of dilute and more concentrated solutions of the disinfectant are put in a number of sterilized tubes. With a sterilized dropping pipet, an equal number of drops of a well-shaken culture is added to each of the tubes, and mixed with its contents by gently shaking. The same number of drops of the same culture that is added to the disinfectant solution, is added to a tube of sterilized bouillon for the control tube.

A large number of tubes with 5 to 10 cc. of nutrient jelly or agar in each are kept at a liquefying temperature. From each of the disinfectant solutions containing the organisms, as well as from the control tube, one drop is transferred to one of the nutrient jelly or agar tubes, and the tubes placed in the thermostat. The same dropper being used in all to insure the transfer of about the same quantity in each one.

The objection to this method is that too much of the disinfectant may be transferred to the nutrient media with the organisms, and thus prevent the germ from growing when it is not destroyed and thus lead to deception.

In my experiments with carbolic acid, I have employed the exact dilution method, described by A. C. Abbot in the Johns-Hopkins Hospital Bulletin, in his article on corrosive sublimate, of which I will give a description.

Fluid cultures, or watery suspensions of the organisms were mixed with carbolic acid solutions in such proportions that the organisms were in a fluid containing the acid in the required proportion, 2:100, 1½:100 or 1:100 as the experiments will show.

This was done by adding to 23.5 cc. of distilled sterilized water .5 cc. of acid; this was thoroughly shaken and allowed to stand until the acid was dissolved; then 1 cc. of bouillon culture of the organisms was added, and gently shaken to distribute the germs through the solution.

This gives us a 2 per cent. solution of the acid, which was used throughout the first series of experiments.

As soon as possible after the bouillon culture was added, with a sterilized dropping pipet, one drop of the acid solution containing the organisms was transferred to 10 cc. of distilled sterilized water, and the water well shaken. With the same pipet after it was sterilized in a Bunsen flame, one drop was transferred from the water to 10 cc. of nutrient agar, and the agar plated according to the Koch method. Cultures were also made after five and ten minutes exposure to the acid.

The control plate was made by adding to 24 cc. of distilled sterilized water, 1 cc. of the same bouillon culture used in the acid solutions, and the same dilution carried out. By this method it is easy to see that only the merest trace of acid is transferred to the agar plate with the organisms. The dropping pipet dropped fifty-two drops to the cc, therefore the acid would be present on the agar plate 1:13,520,000. Not enough to inhibit the growth of the organisms that were not destroyed by the action of the acid.

Throughout these experiments there will be noticed certain minor irregularities, that is, occasionally there is found more colonies on a plate made after ten minutes exposure to the acid than on one made after five minutes. This is explained in no other way than that we are dealing with a mechanical suspension of solid particles in a solution, and one drop of this solution may contain a great many more germs than another, or clumps may be formed containing a very arge number of germs. In the latter case it would require onger exposure to the acid to kill all the germs.

In these experiments I did not filter the bouillon culture, as A. C. Abbot did in his work, with corrosive sublimate, but used it just as the germs grew in the tube by only shaking it well just before it was used to distribute the germs through he bouillon as evenly as possible; and then if any clumps existed they would be exposed to the acid under conditions more similar to those met with in the disinfection of wounds.

The staphylococcus pyogenes aureus was used in most of hese experiments, because it is the germ against which our efforts of destruction are most often aimed, and to test the acid on a spore-producing germ, the bacillus subtilis was used. The virulence of the staphylococcus pyogenes aureus used was demonstrated by it producing an abscess under the skin of a rabbit inoculated with it; also by it causing the death of a rabbit inoculated in the vein of the ear.

EXPERIMENTS.—SERIES I.

Throughout the first series of experiments the organisms were exposed to a two per cent. solution of the acid, and the experiments all made the same.

PLATE I.—September 8, 1. cc. bouillon culture of the aureus 3 days old; 23.5 cc. of distilled sterilized water; .5 cc. acid; control plate, too many to count; immediately, 48; five minutes, 5; ten minutes, 0. Counted after 72 hours.

PLATE II.—September 12, bouillon culture of aureus 7 days old; control plate, too many to count; immediately, too many to count; 5 minutes, 23; 10 minutes, 0. Counted after 72 hours.

PLATE III.—September 14, bouillon culture 3 days old; control plate, too many to count; immediately, 97; 5 minutes, 1; 10 minutes, 0. Counted after 48 hours.

PLATE IV.—September 16, bouillon culture 24 hours old; control plate, 68; immediately, 2; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

PLATE V.—September 17, bouillon culture 48 hours old; control plate, 89; immediately, 1; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

PLATE VI.—September 18, bouillon culture 72 hours old; control plate, too many to count; immediately, 61; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE VII.—September 21, bouillon culture 48 hours old; control plates, 710; immediately, 2; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE VIII.—September 22, bouillon culture 4 days old; control plate, estimated at 8,640; immediately, 34; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE IX.—September 22, bouillon culture 48 hours old;

control plate, 312; immediately, 0; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE X.—September 23, bouillon culture 48 hours old; control plate, 830; immediately, 2; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE XI.—September 23, bouillon culture 3 days old; control plate, estimated at 1,553; immediately, 942; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

SERIES II.

Throughout this series the organisms were exposed to a one and one-half per cent. solution of acid. This was prepared as follows: To 94.5 cc. of distilled sterilized water, 1½ cc. of the acid was added; after the acid was thoroughly dissolved 24 cc. of the solution was measured into a test tube, and 1 cc. of the bouillon culture of aureus was added.

PLATE I.—September 24, bouillon culture 48 hours old; control plate, 253; immediately, 3; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

PLATE II.—September 24, bouillon culture 48 hours old; control plate, 296; immediately, 10; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

PLATE III.—September 26, bouillon culture 3 days old; control plate, too many to count; immediately, 630; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

PLATE IV.—September 30, bouillon culture 48 hours old; control plate, 367; immediately, 1; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE V.—September 39, bouillon culture 3 days old; control plate, 426; immediately, 2; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE VI.—September 30, bouillon culture 3 days old; control plate, 207; immediately, 109; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE VII.—October 3, bouillon culture 48 hours old; control plate, 207; immediately, 21; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

PLATE VIII.—October 3, bouillon culture 14 days old;

control plate, 239; immediately, 0; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

Plate IX.—October 3, bouillon culture 14 days old; control plate, 198; immediately, 0; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

Plate X.—October 4, bouillon culture 14 days old; control plate, 219; immediately, 3; 5 minutes, 0; 10 minutes, 0. Counted after 72 hours.

Series III.

Throughout this series the organisms were exposed to a one per cent. solution of the acid. This solution was prepared by adding to 95 cc. of distilled sterilized water, 1 cc. of the acid, and as soon as the acid was thoroughly dissolved 24 cc. of the solution was measured into a test tube, and 1 cc. of the bouillon culture of aureus was added.

Plate I.—October 5, bouillon culture 24 hours old; control plate, 151; immediately, 92; 5 minutes, 10; 10 minutes, 0. Counted after 48 hours.

Plate II.—October 5, bouillon culture 24 hours old; control plate, 198; 5 minutes, 102; 10 minutes, 20; 15 minutes, 0. Counted after 48 hours.

Plate III.—October 5, bouillon culture 48 hours old; control plate, 648; immediately, 290; 5 minutes, 119; 10 minutes, 7. Counted after 48 hours.

Series IV.

Organisms suspended in a water solution, and exposed to a 1½ per cent. solution of the acid. Prepared as follows: 5 cc. distilled sterilized water; 15 drops bouillon culture of aureus; 4 cc. acid solution, 3:100. For the control tube, 10 cc. of distilled sterilized water, 15 drops of the same bouillon culture.

Plate I.—October 8, aureus culture 3 days old. Control plate, estimated at 1,265; immediately, 112; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

Plate II.—October 8, aureus culture 5 days old. Control plate, estimated at 2,194; immediately, 185; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

Plate III.—October 10, made the same as plates I and II, using sterilized bouillon in the place of the water, as in I and

II. Bouillon culture of aureus 5 days old. Control plate, estimated at 1,293; immediately, 81; 5 minutes, 0; 10 minutes, 0. Counted after 48 hours.

Plate IV.—October 10, aureus culture 5 days old. Control plate, estimated at 2,136; immediately 0; 5 minutes, 0; 10 minutes, 0.

SERIES V.

The bacillus subtilis was used in this series to demonstrate the action of carbolic acid on spores. In the first three plates of this series, the organisms were exposed to a 1½ per cent. solution of the acid. These plates were all made from the same bouillon culture of the organisms, 3 days old, which was filtered through glass wool to remove the enormous clumps which formed in the bouillon, thus making the result more uniform.

Plate I.—October 14. Control plate, estimated at 1170; immediately, estimated at 1,057; 5 minutes, estimated at 804; 10 minutes, estimated at 284. Counted after 3 days.

Plate II.—October 14, bouillon culture of subtilis 48 hours old. Control plate, estimated at 4,360; immediately estimated at 2,620; 5 minutes, estimated at 1,200; 10 minutes estimated at 630. Counted after 3 days.

Plate III.—October 14, bouillon culture of subtilis 48 hours old. Control plate, estimated at 930; immediately estimated at 568; 5 minutes, estimated at 420; 10 minutes, estimated at 210. Counted after 3 days.

In the three following plates, the organisms were exposed to a 2 per cent. solution of the acid, the bouillon culture 6 days old, filtered through glass wool.

Plate IV.—October 17, bouillon culture of subtilis 48 hours old. Control plate, estimated at 1,218; immediately estimated at 936; 5 minutes, estimated at 520; 10 minutes, estimated at 118. Counted after 3 days.

Plate V.—October 17, bouillon culture 4 days old. Control plate, too many to count; 5 minutes, estimated at 1,400; 10 minutes, estimated at 1,100; 15 minutes, estimated at 296. Counted after 72 hours.

Plate VI.—October 17, bouillon culture 4 days old. Control plate, too many to count; 5 minutes, estimated at 1,680;

10 minutes, estimated at 945; 15 minutes, estimated at 510. Counted after 72 hours.

In the three following plates, the bacillus subtilis was exposed to a 3 per cent. solution of the acid. The bouillon culture or subtilis was 24 hours old, filtered through glass wool.

Plate VII.—October 24. Control plate, estimated at 500; 5 minutes, 74; 10 minutes, 0; 15 minutes, 0. Counted after 72 hours.

Plate VIII.—October 24. Control plate, 496; 5 minutes, 89; 10 minutes, 0; 15 minutes, 0. Counted after 72 hours.

Plate IX.—October 24. Control plate, 647; 5 minutes, 84; 10 minutes, 0; 15 minutes, 0. Counted after 72 hours.

CONCLUSION.

The question now arises, what conclusions are we justified in drawing from this work?

1. I claim to be justified in asserting that carbolic acid *is a disinfectant.*

2. That a two per cent, solution of the acid will destroy the staphylococcus pyogenes aureus immediately on coming in contact with the organism.

3. That 1½ per cent. solution will destroy these organisms within five minutes.

4. That a 1 per cent. solution will destroy these organisms within fifteen minutes.

That a 3 per cent. solution will destroy the spores of the bacillus subtilis within ten minutes.

A STUDY OF THE SPINAL CORD OF A SPRING-HALT HORSE.*

By T. L. BOLTON, M.D., Boston, Mass.

The horse from which this cord was taken had belonged to a farmer living near Boston. The animal was about twenty years old, and was known to have been afflicted with spring-halt five or six years before 1891, when it was destroyed. During this time it had become continuously worse, and at the time of its destruction it was practically worthless. The attention of Dr. L. H. Howard, President of the Massachusetts Veterinary Association, was called to the animal in the summer of 1889. He gives this description of its symptoms and efforts at locomotion at this time: "The animal, on being moved, would pick up each hind leg with a quick, jerky motion, characteristic of spring-halt, but the great excess of motion seemed to be that of abduction; the whole limb would fly out away from the body, so much so that he would sometimes hit it against the shafts of the vehicle to which he was harnessed. The foot came back to the ground, however, in proper advance of the point of leaving it, and progression was accomplished after the animal was once in motion. The muscular contractions quickly diminished until they became nearly normal, and did not take place again while he was trotting. On dropping his gait to a walk, they would sometimes occur again for a few steps; when he had come to a standstill, then always on starting again the above-described movements would take place. These symptoms all the time increased until the animal came into our possession in the summer of 1891. He had then become an exaggerated case. The motion of abduction was now so excessive that he would throw the first limb lifted so high that he would lose his balance, and be obliged to hop on the opposite limb, when that in turn would fly out and up so high that over he would balance on the first one again, and thus he would 'dance the ballet' for several seconds before being able to progress at all. Finally the excessive contractions would subside enough so he could step forward, and he would trot off all right for a longer or shorter distance, when he would have to stop and again have his 'dance.' In some instances the throwing up of the limb would so overbalance him that he would fall to the ground. If moved suddenly in a stall of ordinary width, he would strike first one side of it and then the other several times with his hoofs." In June of 1891 the animal was placed in charge of Dr. Howard for experiment. He invited several veterinary specialists, who were interested in spring-halt, and who had theories of the nature of the disorder, to try their treatment upon the animal, and supplied the means for doing so. Dr. Bryden alone accepted the invitation. He made a careful examination, and diagnosed the case as a disorder resulting from defective hoofs. This belief that a defective hoof was the cause of spring-halt he had been led to by his father more than thirty years before. This is his description of the animal and its pathological symptoms:

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* An abstract of a paper read before the Massachusetts Veterinary Association, at Boston, June, 1892. Reprint from *The Journal of Nervous and Mental Disease.*

"The horse was a small black pony, about fourteen hands high, and twenty years old, apparently well enough, with the exception of hind legs, which were badly afflicted with spring-halt, both legs being nearly, if not quite, alike. In viewing the animal from behind, the crests of the illium were not even. The gluteals were both alike flat, and the hips drooping, and the sacrum and tail elevated and coarse; the muscles to the stifle were somewhat wasted; the muscles behind the tibia were small, and felt like tendons to within two or three inches of their origin. The hocks were both coarse, but not more than ought to be expected under the circumstances, his age and the way he had been used for some time having tended to produce changes; both had a small elevation or slight coarseness at the seat of bone spavin. His legs below the hocks were always swollen, from the fact that when he attempted to move in his stall he struck his ankles against the sides with such force as to make and keep them sore."

Most of these symptoms will be recognized immediately as common to all cases of spring-halt. Dr. Bryden, believing that the hoofs were the primary cause, and that those other symptoms resulted from the disordered hoofs, gave special attention to them. He says:

"They were smaller than nature had intended them to be, and very nearly round; the wall short and very thick, the sole low, the bars strong, the heels short, and the frog of medium size. The horn seemed fairly healthy, but it grasped the extremity like a vise, causing him much uneasiness."

Dr. Bryden began his treatment upon the theory that the above-described symptoms were due entirely to the compression which the too small hoofs exerted upon the nerves and blood-vessels supplying the lower extremity. The hoofs were thinned and pared down, and the frog thoroughly cleaned, and kept so. The details of his whole treatment are unnecessary. It will be sufficient to say that after two months' care and treatment the animal improved greatly. Dr. Howard says of this treatment, "that it caused a certain decrease of the excessive motion described, and we saw him on two or three occasions even start off without his customary introducing 'ballet.'" The recovery was not complete, and the treatment does not seem to have given evidence that the animal would ever have completely recovered, as it was destroyed. The spinal cord was taken out and sent to Dr. H. H. Donaldson, Assistant Professor of Neurology at Clark University. He placed it in my hands, and under his direction it has been examined with a microscope.

The specimen consisted of a section of the cord extending from the level corresponding to the eleventh dorsal vertebræ to the termination of the cord in the sacrum. The portion of the cord caudal of the origin of the fifth pair of lumbar nerves was so badly bruised in the process of removal from the vertebra that it was unfit for microscopical examination, save the roots and ganglia of the first and second pairs of sacral nerves, which were held intact by the dura mater. In addition to this were the roots and ganglia of the fourth, fifth and sixth pairs of lumbar nerves. The whole specimen was hardened in a 2-5 per cent. solution of bichromate of potash plus one-sixth its volume of 95 per cent. alcohol. In this fluid it remained for two months, when sections were taken from six different levels of the cord, and also the roots and ganglia of the fourth, fifth and sixth pairs of lumbar, and of the first pairs of sacral nerves, and completely hardened in strong alcohol. These specimens were then numbered to preserve the order, and sectioned. In staining, two purposes were kept in view: the first to show the fibres, and the second to show the cells. For fibre staining the best results were obtained with a double stain of palladium chloride and ammonia carmine. Other fibre stains were nigrosin, acid fuchsin and carminic acid. The most satisfactory cell stain was a double stain of Delafield's hæmatoxylin, and Van Giesen's picrofuchsin. As the cells did not show a regular and marked degeneration, we need not concern ourselves with them. The fibres alone seem to have undergone a regular degeneration. Beginning with the sections from the level of the eleventh dorsal nerve and proceeding caudal, the location of the degenerated nerve fibres will be pointed at the successive levels where specimens were taken. On a section from the level of the eleventh dorsal nerve a lesion appears in both the dorsal and ventral columns. In the dorsal columns it has a grosser appearance, and is not so diffuse as in the ventral columns. Large numbers of fibres have entirely disappeared from the region about both posterior horns of the gray matter. The degenerated areas are not quite symmetrical in the right and left halves of the cord. In the ventral columns the degenerated columns appear singly, as a rule, and are distributed around the periphery of the anterior columns as far as the points of entrance of the anterior roots of the spinal nerves.

There are in addition more or less degenerated fibres distributed throughout the entire section. The appearance of the section from the level of the first lumbar vertebra is similar to that from the level of the eleventh dorsal. In the posterior columns the lesion is somewhat more marked, but in the anterior columns it is less marked and not so closely confined to the periphery. On the section from the level of the fourth lumber vertebra, no lesion, properly speaking, appears in the anterior columns, but it is perfectly plain in the posterior columns and involves a larger area of the section. The location about the posterior columns is about the same as on the other sections. As the animal was old and had been subjected to hard usage, the degenerate fibres in the anterior columns may have no pathological significance. The disturbance in the posterior columns is certainly significant of something more than the decay resulting from old age and hard usage. It is confined entirely to the sensory areas. The first indication of any degeneration is the failure of the myelin substance to receive a stain, and not unfrequently the fibre that fails to stain is swollen. The axis-cylinder is next to disappear, and finally the medullary sheath, leaving an unstained gap in the section. A section was allowed to remain in nigrosin for twelve hours, and no stain of these areas was effected. These unstained areas can easily be seen without a glass, and was first noticed on an unstained section from which the alcohol was allowed to evaporate.

The results of the examination of sections taken from the ganglia of the fourth, fifth, and sixth pairs of spinal nerves are perhaps more interesting still. The ganglia were sectioned at intervals of one-eighth of an inch, and the order of these sections carefully maintained. The same methods for staining were used for these as for the sections from the cord. The most peripheral section of one ganglion showed that a single funiculus in the motor region had undergone complete degeneration. Proceeding toward the cord the successive sections showed that this funiculus became gradually broken up and distributed throughout the whole motor area of the section, for the degenerated fibres were found scattered in every part of the motor area. Although the disturbance in the cord was mostly confined to the sensory area, it is the motor fibres in the nerves that have suffered decay. No very careful and detailed study of the blood-vessels has been made, so that it cannot be definitely stated whether or not the lesion has resulted from a lack of blood supply. It is not deemed expedient to attempt to argue the consistency of a sensory degeneration in the cord and a motor degeneration in the spinal nerves. It is my purpose simply to state what appear to be the facts in regard to the condition of this cord. We have simply a coincidence: a horse is afflicted in a high degree with spring-halt, and a lesion has been found in the sensory areas of the cord and in the motor areas of certain nerves which control the hind limbs. Some veterinary surgeons have long supposed a central origin for the disease, or at least that the disease was nervous. The disease has resisted up to the present time all attempts at a cure, and the sale of a horse is greatly injured when it is known to be afflicted with spring-halt. As a means of getting a better understanding of the symptoms of spring-halt, I would suggest a careful study of the cutaneous sensibility of the hind limbs. The history of the animal is also important in determining the cause.

Before closing this paper I wish to enlist the services of the members of this Association in obtaining further material for finishing a work that appears at present promising. I will take it upon myself to examine any material sent to Clark University, Worcester, Mass., and report the results of the examination to the person who sends it. The cord after being taken out (and the whole cord is desired) should be placed in a 2-5 per cent. solution of bichromate of potash plus one-sixth its volume of 95 per cent. alcohol, and expressed to the above address.

THE SCIENTIFIC INVESTIGATIONS OF THE BUREAU OF ANIMAL INDUSTRY.

By D. E. Salmon.

(*Continued from page 635.*)

These inconsistencies show that the whole argument lacks candor or even a desire to reach the truth. It may be freely admitted with Frosch, and as we have shown in our reports, that this germ, in common with many others, varies greatly even in its staining properties when obtained from different outbreaks, or when grown under different conditions. The same is true of the swine-plague germ. This, however, does not prevent each from having its peculiar staining, which is valuable as a diagnostic point when taken in connection with other morphological and biological characters, but which alone is not sufficient to determine a species.

That the figures of the hog-cholera germ in our reports do vary somewhat as to the staining, as charged by Frosch, is not denied, but he surely is the last one to consider this as bearing against the value of our statements, for he expressly calls attention to the variations which are liable to occur and to the delicacy of the manipulations necessary to get comparative results. Our figures were drawn from the natural objects and were correctly drawn, if they had been diagramatic plates, such as adorn Billings' report, then an exact correspondence might have been expected. In spite of the variations, however, the difference in staining between the hog-cholera and swine-plague germs is very apparent in our plates, and can be relied upon as exact.

With organisms which vary in many of their characters to the extent which occurs in bacteria from slight changes in the conditions of life, it goes without saying that it requires skill to secure typical preparations, and even then such are not to be expected from all outbreaks. For that reason a safe diagnosis cannot be made from a single character, and above all is it unsafe and unscientific to reach positive conclusions from the simple microscopical inspection of a preparation, the germs of which have been cultivated, stained, and mounted by another person.

The examples of Billings' recklessness in this respect, and of his discomfiture, are numerous and instructive. Dr. Shakespeare, previous to his appointment on the Commission of Inquiry, sent him a photograph of a certain micro-organism, and inquired if it resembled the germ found by him in the swine-plague of Nebraska. Billings at once accepted it as identical with his swine-plague germ, showed it among his friends, and wrote it up in the newspapers as another proof of the correctness of his own conclusions and the incompetency of the Bureau, When the commission reached Lincoln, the members were invited to meet a number of scientists and people connected with the university, and at this gathering Billings made an address. Among other things he made a strong point of the confirmation which his work had received from the investigations of Shakespeare, and exhibited the photograph as proof positive that the latter had isolated the same germ from hog-cholera which he himself claimed to be the cause of that disease. To no one was this greater news or more of a surprise than to Shakespeare himself, who was obliged in self-defense to explain that the germ in question was not obtained from a sick hog but from a person affected with some bowel disorder, and he had no reason to suppose it had any relation to any swine disease.

His alleged discovery of the germ of yellow fever is only another example of the same ridiculous blundering. He claimed to have found the organism described by Babes, in 1885, in specimens from seven cases of yellow fever, and that in only one case was there any pollution. Of these investigations he wrote: "I am willing to risk some considerable reputation that the germ herein described as present in all this material is the specific cause of yellow fever, as well as that the description of the morpho-biological phenomena presented by the germ of the southern cattle-plague will largely be found applicable to this" (Original Investigations of Cattle Diseases in Nebraska, 1886-1889, p. 116).

Now what are the facts about this? In his recent report Sternberg gives a history of this material, and of the results of a careful examination of it by different experts. The bacillus of Babes, alleged by Billings to be present "in every section and in great numbers," is conclusively shown to have been absent from the specimens which he referred to with greatest confidence, and probably did not exist in any of the specimens which he examined. These specimens did contain the *bacterium coli commune* and other organisms which represented a *post-mortem* invasion of the tissue (Report on the Etiology and Prevention of Yellow Fever, by George M. Sternberg, Washington, 1890, pp. 176-180). His identification of the Babes germ is therefore on a par with his identification of his swine-plague germ in the photograph sent him by Shakespeare, and his much vaunted yellow fever investigations turn out to be a farce of the most absurd character.

To come back to Billings' opinion of the slide sent him by Detmers, it can be seen that it was formed with the same kind of evidence as his opinion of the Shakespeare photograph and of the yellow fever germs. As evidence of the kind of germ, this opinion, from the nature of the case, can have no weight, but as evidence of the care or lack of care shown in reaching his conclusions it is incontestible.

Detmers, who studied the germ from which the slide, was made, both in cultures and by the inoculation of a rabbit, decided that it was entirely different from his swine-plague, and as Frosch remarks "on the very remarkable ground that the *post-mortem* lesions found in the rabbit were not like those he was accustomed to see in pigs." Detmers and Billings were both positive on two points—first, that their swine-plagues were identical, and, second, that this germ, discovered by the Bureau was entirely unlike the germ of their disease.

Detmers said: "I cannot identify it with swine-plague. If it is identical with it, then I must say the disease I heretofore pronounced swine-plague, or, as the farmers call it, hog-cholera, must be bogus; that is, something else. I am compelled to pronounce the disease of which the rabbit died a fatal septic disease entirely different from swine-plague." Again, he says of the disease produced by this germ, "It is a septic germ, readily kills rabbits and causes septicæmia, but has no connection with the disease in question. It is not for me to say where Dr. Salmon obtained it, or from where he may have imported it" (Billings' report on Swine-Plague, pp. 249 and 257).

Billings himself took the same ground, for he remarked: "Swine-plague itself being a septicæmia, may it not be possible that Mr. Salmon has accidentally dropped upon some kind of a septic organism capable of producing the same lesions?

"This question has been frequently in my mind of late, for if not so, I do not know how to answer for all Mr. Salmon's wonderfully positive experiments. If not so, then these experiments were never made, and the whole thing is a concocted farce, or else he has been secretly using the real germ and showing people this other thing. I am determined to force this question to such an issue that the real facts must come out sooner or later, for I, as repeatedly said, have no fears but what my own work will stand every test" (L. c., p. 249).

Here are the two positions, which side was correct? The investigations of von Esmarch, Frosch, Bunzl-Federn, Raccuglia, Afanassieff and others leave no doubt as to the reality and pathogenic effect of our hog-cholera germ. Billings himself has since adopted it, but what microbe did he and Detmers have at the time they were making such charges against the Bureau? Surely if they had ever seen the hog-cholera germ they would have recognized it in this culture which Detmers obtained from Persh. If they had not seen it, then what becomes of the claim, made by them both, that Detmers is entitled to the credit of its original discovery?

I do not propose at this time to follow these critics through any more of their inconsistent and contradictory writings. I have done this much to show you the quality of the investigations which are held up to you because they are "recognized as good abroad, and cannot be ignored at home." If the general conclusions of a man's investigations are so absolutely wrong, how can the details upon which these are founded be any nearer right? We might and should excuse errors or apparent errors of detail, but how can you accept a work which is wrong in its principal conclusions?

The principal conclusions of the Bureau reports as to the existence of the hog-cholera and swine-plague germs in this country have been confirmed on all sides. The doubts of European investigators as to the correctness of these conclusions have been withdrawn. What discoveries of value have been made regarding the biology of the hog-cholera or swine-plague germs by other American investigators, and have been satisfactorily confirmed? If, on the other hand, you compare the report of Frosch with the Bureau reports you cannot fail to observe how many of his conclusions were previously announced in our reports.

Does this Association take no pride in the investigations of the Bureau of Animal Industry, or does it propose to stigmatize them as a disgrace to the veterinary profession? Is it willing to brand them as discreditable and the men connected with them as ignorant, incompetent and dishonest on the evidence which has been submitted? Do you forget that Billings has vilified about every scientist whose reputation might serve him as a stepping-stone if he could once get it under his feet?

Why then are these reports of his, which contain no discoveries of value, if they contain any discoveries at all, reports which are filled with the most brutal personalities, which give no account of experiments conducted in a scientific manner, which are lacking in those details necessary for their confirmation by other investigators, which above all are manifestly wrong in their principal conclusions—why are these reports now held up before us as too good to be ignored, and the reports of the Bureau of Animal Industry, written in part by members of this Association, denounced as they have been? Are you aware that this report of our committee was no sooner published than it was circulated broadcast by Billings as another vindication of his work and his methods? Do you not know that he is repeating with Texas fever the role which he played with swine diseases—denying the existence of the true germ, and claiming the discovery of something else? Why should this Association go out of its way to assist such a man in obstructing the progress of science and in vilifying its own members?

Gentlemen, I leave the matter with you, knowing that my own work has been carefully and conscientiously performed, and with the full confidence that every detail in the work of my scientific assistants has been done with equal care and honesty. It is for you to decide whether such reports from one of our leading committees are to be endorsed and encouraged. I express no opinion as to the honesty of the committee, but I do charge that its report was incorrect in both its statements and its conclusions, and inexcusable in its personalties. I do insist that this Association cannot afford to endorse such a report or to allow others like it to be presented in the future, whether they affect me or any other member of this Association. The truth will finally prevail, no matter what our action may be, but if such mischievous reports continue to come from a leading committee you will be responsible for the loss of prestige, and influence to the Association and the loss of good will between members which must necessarily follow.

REPORTS OF CASES.

"*Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.*"—VETERINARY RECORD.

A NEW CATTLE DISEASE (Epizootic or Enzootic Chorea).

By T. J. TURNER, D.V.S., State Veterinarian, Columbus, Mo.

History.—This trouble first made its appearance about three years ago among the animals of a stockman of Missouri, but no alarm was taken, as only a few were affected, and no danger suspected to others. No word was sent to this office on this account. Being away from home on business, and in the vicinity of the malady, I was fortunate enough to see the few cases that then existed. I visited the farm, and made a casual examination of the animals diseased. After obtaining all the history possible of the outbreak (not then considered as such), I concluded that these were simply individual cases; that the disease was probably of a general nervous nature, due possibly to the breeding of the animals (they having been inbred slightly). Giving this as my opinion I gave or advised no treatment, but objected to the breeding, and advised the discontinuance of such methods. These animals came frequently under my observation, with the symptoms very little, if any, augmented for about two years. Some affected would at times apparently get better and recover; then again one or two more would become affected with the same symptoms. Still no serious trouble was anticipated, no deaths having occurred. The cases continued with but little change until a few months ago, when I was notified officially, and requested to visit the locality and investigate the trouble. I did this, and find upon my arrival quite a number suffering. Some two or three had died, and the number of cases was increasing very rapidly.

Symptoms.—They are of gradual development. The disease, of whatever nature, its operating cause is manifest purely by nervous affection. At its incipiency the animals quiver and tremble as though palsied; they are unable to keep the head quiet, it being in a constant quiver; their eyes have a peculiar, starry look and fixity of expression. In the movements, the animals simulate the gait of one affected with locomotor-ataxia. This is during the first stages. As the disease progresses, the tremulous motion of the head continues with much exaggeration. The gait changes somewhat, the symptoms peculiar to an animal suffering from laminitis being added to that one already noted. These symptoms continue to increase in severity, with additional ones added. Now, we have tetanic convulsions upon any excitement. Co-ordination becomes almost impossible, the animals falling over in a convulsion; the muscles of the whole body become tense and rigid, the limbs entirely stiff, and should any motion be attempted the animal will topple over. The appetite is splendid, and usually digestion is good; I have, however, since this outbreak heard of some that had diarrhea. This latter symptom has not occurred in any that came under my own observation. These symptoms increase, involving all the muscles of the body, and the poor animals will pass off in one of the convulsions.

Distribution.—Not widely disseminated, yet it is not confined to one farm or community. Since the outbreak herein described, several more of such instances have occurred. Several persons in the same county have cited instances in their own herds, where a few have been and were affected. Again, this disease exists in several neighboring counties. The death rate so far being small, but little alarm has been taken, and for this reason we have not heard of as many cases of this malady as do exist.

Etiology.—Of this we are not able definitely to speak, for thus far we have been unable entirely to account for a cause. First, search was made to find if the animals that were in the neighborhood that was affected were not all related to those that were first affected with this disease. This was with a view to find out if the particular breed had anything to do with it, or any especial family were affected. This idea, viz., that of heredity, proved of no avail, for shortly animals of an entirely different breed were found to be affected. Now, two ideas, that of a peculiar manner of breeding and inherited disease, have been dispensed with. Next the pastures were examined, and no cause found, the animals running on blue grass pasture and high rolling, well-drained land, no swamps or low land being accessible. These pastures have not been ploughed for twelve or fifteen years. Failing so far, the next step was that of supposed microbic origin, the disease lately seeming to be infectious or contagious, so frequent have been the new cases developed. So far there have been no positive results in that line of research. Having decided to try and find the real cause by means of the microscope, an animal near death was selected and destroyed.

Post-mortem.—Before speaking of the post-mortem proper, I will call attention to the method used to throw the animal. Being very bad, locomotion was necessarily slow and irregular. He was urged along very slowly to a point where we wished to destroy him. Just at this point I walked up closer, and as I did so the excitement was increased, which in the same ratio decreased the speed, until finally the poor beast was unable to move, and looked as though it were tied to the spot. Then by laying the hand upon the animal's back with a light tap, it would drop over as though it were knocked down, its muscles being perfectly rigid. At this stage it is unable to rise until after some minutes have elapsed. The post-mortem revealed nothing, all the internal organs appearing normal, and the different apparatuses appearing perfectly healthy. This was a disappointment. The nerves, together with the spinal cord and brain, with their meninges and substance, failed to show any change so far as gross anatomy was concerned. After the post-mortem, portions of the nerves, the spinal cord, the whole brain substance, together with its meninges, were obtained, from which cultures were made and of which a microscopic examination was made.

This examination revealed an atrophy of the nervous structures, and in some parts only the axis cylinder remained, existing as a string. These experiments are still in progress, though no positive results have so far appeared.

Treatment.—Not being positive as to the nature of the malady, no direct line of treatment in the way of medicines can be advised. The treatment, however, may consist of two orders, viz., prophylactic and curative.

Prophylactic. — Remove healthy from diseased. Change food and water. Change all stock if upon a low land pasture to high land, and burn or bury those that succumb to the malady.

Medicinal.—Use nerve tonics and general strengtheners, such as nux vomica, gentian, ginger, Fowler's solution of arsenic, sulphate of iron or potassium of iodide. Those remedies may prove of benefit to those affected in arresting tissue metamorphosis or degeneration. Again, antiseptics may be used with benefit, and in cases where diarrhœa is present a good purgative followed by oleaginous drinks will be productive of good.

TRAUMATIC PERICARDITIS.

By T. B. ROGERS, D.V.S. Woodbury N. J.

CASE 1.—Knitting-needle laying free in the right ventricle, breathing difficult and painful œdema of the dewlap, cough, considerable dullness on percussion over left lung. Case destroyed as suspected contagious pleuro-pneumonia. Post mortem showed peri and endocarditis with congestion of the lung.

CASES 2, 3, 4.—The presence respectively of pieces of plain ribbon and barbed wire in the ventricular mass at the base of the heart, symptoms like preceding; condition not diagnosed before death.

CASES 5, 6.—Pieces of umbrella wire and a tenpenny nail respectively, in ventricular mass near its base, œdema of dewlap, dullness of left chest low down, muffled sounds of the heart, *painful breathing, all symptoms much augmented on exercise*; condition diagnosed correctly before death.

CASE 7.—Cough, painful breathing, great pain on intercostal pressure, no œdema of dewlap, area of dullness of cardiac region increased, *condition came on gradually*, symptoms increased in severity on exercise; diagnosis, traumatic pericarditis. Autopsy revealed tubercular deposits through the entirety of the muscular substance of the heart, breaking down of some of these nodules gave rise to peri and endocarditis.

Case 8.—Cow gave seven quarts of milk at night, eat her feed, and was found dead in the morning.

History, about three months previously had an attack of what his owner described as "difficult breathing like a horse with lung fever;" this passed off and was succeeded in a few weeks by a marked rigor; after this the cow returned to an apparently normal condition, and so continued until her sudden death. Autopsy revealed a large heart, bound down so firmly to the sternal pleura that in order to remove the viscera intact it was necessary to resect a portion of the sternum. The left ventricle was pierced near its apex by a very sharp, imperfect (headless) eightpenny nail, the pericardial fluid was small in amount, free from flakes of fibrin or pus, and while at a few points the sac was adherent to the heart, the adhesions were not many or formidable. The canal traversed by the nail evidently closed immediately after it, preventing access of air, and consequent decomposition of the wound secretions; the auricles and ventricles were all filled with large, soft, post-mortem clots, extending some distance with the real vessels; there were small, recent extravasations with the newly formed tissue at the apex of the ventricle, and on cutting into the neoplasm about two tablespoonfuls of thick, creamy, odorless pus, looking much like the pus of a strangles abscess, was evacuated, no endocarditis, valves clean, muscular substance hypertrophied, though Professor Harger thought there was some thinning of the wall in the neighbourhood of the injury. This is a very instructive case. The passage of the foreign body from the stomach to the heart was marked by the period of difficulty of breathing, the rigor heralded the formation of pus, yet for weeks this cow kept in good form, eat her rations and gave her quantum of milk with this nail in her heart; the absence of symptoms in this case and the progressive aggravation of symptoms as the traumatism approaches the base of the heart, and especially as the right heart becomes involved, have a diagnostic value. I feel justified therefore in advancing the following:

1st. That traumatic pericarditis may be usually diagnosed during life; that its symptoms are dullness, low down on the left side of the chest, muffled heart-sounds, breathing painful rather than difficult, often grunting, pain on percussion over the lumbar insertion of the diaphragm or between the ribs, œdema of the dewlap, the pain of respiration being very much augmented on exercise.

2d. That the position and length of the foreign body may be approximated by considering the gravity of the symptoms, the greater the amount of pericardial exudate and subcutaneous œdema, the greater the probability that the intruding body is acting as a seton, and permitting access of air and fluids from the stomach to the pericardial sac; if the body is short, the wound may close in its tract. The nearer the apex of the heart the milder the symptoms, and vice versa. If very great disturbance of respiration is present the presumption is strong that the right heart is involved.

3d. The tolerance of the heart to the irritation of these invading bodies holds out hope that in the future surgery may offer relief from what must be regarded as an almost surely fatal condition. I do not believe that removal would add to the risks of a condition bringing the patient into the shadow of death, and I shall carry out my conviction of this by operating on the next patient that comes under my care.

A SUPPLEMENTARY MOLAR.

By A. D. Galbraith, D.V.S.

A sorrel mare, eight years old, was brought to my hospital April 10th, 1885, with the history that she had been losing flesh for two or three months, and had trouble in mastication, and had not taken any nourishment for several days.

The mare was considerably emaciated with an excessive flow of a fetid, ropy saliva from the buccal cavity. An examination revealed a foreign substance in the right cheek, and after removing a half pint or more of partially masticated food, I found a supernumerary tooth that had grown out into the cheek, at an angle of about 45°, from between the roots of the second and third molar teeth of the right superior maxillary. I extracted the tooth, which measured five-eighths of an inch and three inches long. The tooth had almost cut through the cheek. The parts were cleansed antiseptically, which healed rapidly, and the mare soon regained her former condition.

DOUBLE FECUNDATION—DIFFICULT DELIVERY.

By the Same.

I was called twelve miles in the country to a three-year-old Jersey cow, that the owner said had been trying to calve for two weeks.

I found her having an occasional light labor pain and dull; temperature 102°, and pulse 50°. An examination revealed a complete obliteration of the os uteri, and as I could not find an opening, I made a T-shaped incision through the parts with an embrytom, which allowed a portion of the liquor amnii to escape.

I then delivered a living calf, and on inserting the hand to remove the placenta I found another fœtus, which was delivered alive.

I then removed the fœtal membranes, washed out the uterus, gave the cow a stimulant and had the calves cared for. The cow and calves recovered and did well. This was the cow's second parturition, and the occlusion was probably due to development of cicatricial tissue from injuries sustained in her previous parturition.

CONGENITAL DEFORMITY OF PREMAXILLÆ.

By J. F. Pease, D.V.S.

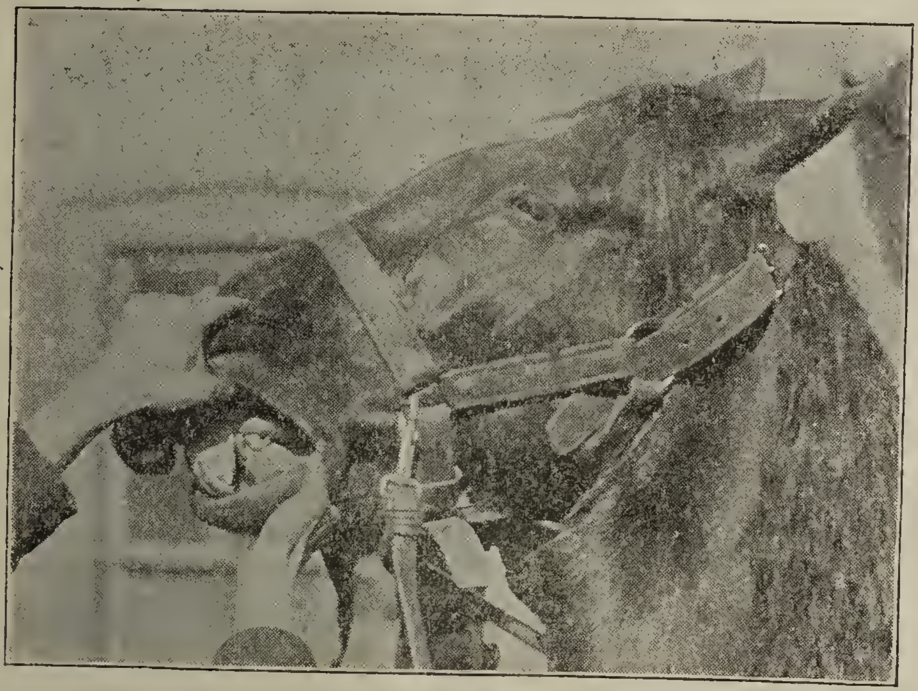
The horse under consideration is a blocky bay gelding about seven years old.

Something over a year ago he was brought to my office to have his teeth examined.

I found the premaxillary bones bent downward at nearly a right angle in the region of the canines, the analogous portion of the submaxilla being bent upward in the same manner. The owner had noticed the condition at birth, and attributes it to an injury the mare had received in pregnancy—too late, however, in my opinion, to have influenced the growth of the bones to this extent.

When first seen by me the lower incisors (nippers) in passing, just touched the upper nippers, thus enabling him to eat corn from the ear.

As the lower incisors did not touch the gums at the angle formed by the deformity of the upper jaw, I did not operate, as by so doing the teeth would not touch at all in passing. Several months later he was seen to fight with one of the farm horses, immediately after which he refused to eat anything but chop feed, and was brought in for operation.



The appearance of the upper angle indicated wounding by the lower teeth and some absorption of bone.

I clipped the corners and dividers with the ordinary incisor cutters, but to get at the nippers it was necessary to pull the jaw to one side. In so doing the upper jaw broke off in my hand at the angle. I finished the clipping with the molar cutters, and sent him home to be fed on ground feed and cut hay.

The owner thought the horse had wholly or partially fractured the jaw at home, as it broke off with comparatively slight traction.

However it occurred, the bones united with no trouble and the deformity as shown in the picture is less, than first. After the photograph was taken the incisors, both upper and lower, were clipped as short as I thought it safe for the vitality of the dentine.

EXTRACTS FROM GERMAN JOURNALS.

By Richard Middleton, D.V.S., Philadelphia, Pa.

ATMOSPHERIC EMBOLI FROM PROLAPSUS UTERI.

Following manipulations for the removal of the fœtal envelopes, and directly ascribable to the same, there occurred a prolapsus of the womb. Frohner-Hunfeld found the cow breathing heavily, under labor, and with an accelerated heart. The hernia was replaced, but early afterward renewed itself, and was the second time successfully put in its normal position. As an anodyne application, an infusion of various agents was injected, to which the patient had great objection, springing violently here and there; suddenly she assumed a tranquil demeanor, swayed momentarily, plunged, and was dead.

The autopsy, held directly after death, gave no abnormal formation; pericardium, myocardium and endocardium in perfect health; blood of right auricle and right heart proper bright red, having coagulated particles and atmospheric air incorporated in its substance. From this we conclude death to have resulted from entrance of air into the venous circulation. The post-mortem being held immediately after death leaves no room for the supposition that the gas here found was but the natural result of decomposition.

F. assumes the entrance to have occurred through the venous system of the uterus, a possibility already pointed out by Prof. Harmes in his endeavor to ascribe puerperal apoplexy to this cause. He offers the following opinion: Previous to each labor pain or other action calling the abdominal walls into play, the thoracic cage is expanded by the deepest possible inspiration, expiration being synchronous with labor. The space occupied by the heart is narrowed, and the afflux of the venous blood hindered; the blood supply in the major circulation is augmented, and the blood pressure is as indicated by Valsalra in his experiments. From the muscular activity, the gaseous interchange and demand for oxygen are enhanced; the respiratory acts being momentarily impeded, carbon di-oxide accrues in irritating quantities, and produces involuntarily a deep inspiration. The result of this is that the chest, being expanded, the heart likewise becomes suddenly larger, and the venous stream accelerated. The negative pressure in the large veins reaches its maximum, while the positive pressure of the superimposed muscles also diminishes. It may now be comprehended how the actual entrance of atmospheric air into a vein of the uterus is theoretically possible.—*Deutsche Zeitschr. f. Thiermed.*

PLEURITIS CURED BY THORACENTESIS.

Ribaud primarily asserts that puncture of the thorax is unfortunately too late, or not at all performed in veterinary practice. The author (Ribaud) handled a case of pneumonia in the horse by bleeding, and later applying a sinapism to the thoracic walls. On the fifth day of the diseased process, pleurisy aggravated the patient. The chest was now subjected to an epispastic composed of cantharides, mercury and camphor, the animal receiving contemporaneously potassi nitras, calomel and digitalis internally.

Since the exudate continued to slowly increase, Ribaud performed thoracentesis upon the right side, and obtained seven quarts of fluid. On the following day eleven quarts were obtained from the left side, and on the third day subsequent the right side again yielded seven quarts of the serosity. After each puncture the thoracic walls were rubbed with gray mercury salve, and diuretics administered internally. In approximately five weeks the horse was cured.

The second instance was that of a six-year-old, half-blooded mare that had been kicked upon the right chest wall. After the animal had been driven about two miles symptoms of a bi-lateral pleuritis developed themselves. From the examination Ribaud noted the presence of considerable serum in the pleural sac. He immediately relieved the patient of twelve quarts of the exudate, and gave the same internal medicines as in the previous case. On the second, fifth, seventh and ninth days after, the thorax was alternately right and left punctured, and eight, seven, four and two quarts respectively removed therefrom. Under this treatment the condition of the mare improved, and after the expiration of the fourth week the hydrothorax had entirely disappeared.—*Ribaud Wochenschrift.*

DETECTION OF HORSE MEAT.

Until very recent times, the detection of horse meat when mixed with or placed adjacent to other meat was impossible. Nietel considered the glycogenic quality of this meat as sufficient proof. He was led to test for glycogen by the discovery of Limpricht that dextrin occurred invariably in horse meat.

As a matter of fact, Nietel found by Kulz's method the amount to vary from 1.07 to 0.37 per cent.; the meat used had stood from three to ninety-six hours after slaughtering before the analyses were made. Beef posesses but the slightest trace if any glycogen, the greatest per cent. reaching but 0.2; in pork and mutton, glycogen is never present. The least possible quantity found in horse meat is considerably larger than the greatest possible per cent. in beef.

Since the glycogen becomes transformed into grape sugar in the process of storing the meat, the latter should also be tested for. The quantity of grape sugar in this flesh is also greater than in other meats. The total amount of carbo-hydrates in horse meat is between 3.8 and 6.2 per cent., while in other meats the highest (calf) is but 1.2 per cent. This difference remains when the various meats are cooked, smoked, or made into sausage.—*Med. Centrbl.*

TUBERCULOSIS OF THE IRIS AND CHOROIDITIS.

A six-year-old cow that had calved four times failed to conceive again, and was put through a process of fattening. Toward the end of August she exhibited symptoms of an extended subacute conjunctivitis of a suppurative nature, accompanied by great swelling of the lids, and with corneal opacity. The treatment was useless.

By the beginning of October atrophy of the bulbus was present; the eye was contracted, hard and blind. About the middle of October the left eye became involved in the same process of destruction. On the 10th of December, the lacteal secretion appeared coagulated, and otherwise altered; on 12th of December, the cow became very weak in the posterior limbs, and on the 16th of January she was utterly unable to rise from the reclining posture. All the symptoms of an acute metastatic arthritis were present in anterior and posterior extremities.

Autopsy.—The left eye-bulb half as large as the right one; cornea and vitreous humor of the same clouded; in the parenchyma of the iris, and in the choroid coat, nodules the size of millet seed, composed of caseous contents. The right bulb nearly normal in size; cornea opaque; anterior chamber containing numerous white points; the vitreous body and lens transparent; upon the internal side of the iris a thin, fibrous coat; in the lungs caseous herds as large as a nut; mediastinal glands enlarged and caseous; in the synovial capsules abundant secretion; supra mammarian lymphatic glands hypertrophied.

Diagnosis. — Pulmonary phthisis with parenchymatous mastitis, tuberculosis of iris, choroid coat and bulbus.—*Schweiz Arch.*

CORRECTION.

"SEEDY TOE."

We take pleasure in correcting a typographical error in the above named article written by Dr. W. Bryden as published in our last issue. At page 611 on the 8th line from the foot of page the words *perforatus* should read *perforans.*—Ed.

CORRESPONDENCE.

EPIZOOTIC LABI-GLOSSITIS.

ELGIN, ILL., Feb. 6, 1893.

Editor Vet. Review :

I am only too glad to help you in any way in the good work you are doing, so have sent you the following report of a disease which has prevailed to a very considerable extent in this neighborhood. I have called it epizootic labi-glossitis, those organs being most affected.

This disease affects both horses and cattle, but is most prevalent in the latter. My attention was first called to it in 1892, in the following manner:

I was requested by Mr.———, a large dairy-man in Kane Co., Ill., to visit his farm and examine his cows, as they were not giving near the milk they should, and would not eat. Upon arriving, I found in all 26 cows affected with the disease in a more or less advanced stage. The symptoms were more or less as follows: Temperature from 2 to 4 degrees above normal; bowels constipated; saliva was flowing very abundantly, in some cases, as much as half a gallon being upon the floor before one cow; the tongue was protruding and raw; muzzle dry; appetite more or less impaired; in some cases, tongue and lips so sore that cows were not able to get feed into their mouths. Pulse varied according to severity of the case.

The disease generally makes its appearance in the following manner: A small blistered condition is first observed upon the inferior portion of the upper lip; the blisters break, leaving a raw surface which soon becomes ulcerated and extremely painful, rendering mastication difficult. The tongue is generally the next organ affected, first being blistered, the skin peeling off and ulceration setting in, the organ swelling in some cases as large again as it should be, and being extremely painful and hot. Saliva flowing in great abundance, being hot and sticky. The disease extends as far back as the pharynx and larynx, in some cases—when it must be regarded as very serious—the animal exhibiting all the symptoms of acute pharyngitis and laryngitis. The muzzle in some cases becomes affected, also the lower lip, but very rarely.

The disease generally gets worse for about 10 or 14 days, and then gradually improves, providing ulceration is not too extensive, or animal too emanciated, when recovery is very slow, if at all. I have seen cases in which portions of the tongue slough off. But should disease be light, after two weeks a gradual improvement takes place, and animal recovers in from one to two months.

Some farmers claim cows that have had the disease never give so much milk again, and therefore sell them for beef as soon as they are sufficiently recovered.

In horses the disease is very similar, but attacks the tongue first, then the cheeks, is more severe and of shorter duration.

The disease is by some thought to be caused by some irritant upon the feed as it grows in pasture, or some weed, but I think this can hardly be, as I have seen it in the city affecting horses that receive no feed grown in districts where the disease abounds.

Most cases I have seen have been along rivers or creeks leading from or receiving water from slews, and cattle and horses feeding in slews are most affected. I am rather inclined to think it is caused by a germ, and that the germ is in the drinking water.

From the following case I would think it is contagious: A gentleman had a horse affected and had to lay it off work and get a fresh horse to take its place; one week afterwards this horse was also taken with the disease.

I have also seen cows taken into a barn where infected animals had been, and used same water, that were soon affected.

I am sorry to say that I did not have any specimens prepared for the microscope, but should it occur again next summer will certainly do so.

Treatment is very successful. I have always used the following for cows: give ol. lini raw ℈ij, repeat every five days; wash out mouth well with warm water containing about half dram carbolic acid to 3 pints; then dress wounds with boracic ac. ℥j, glycerine ℥viij, use these twice daily. Give laxative food, boiled oats, bran, corn, carrots. The above is for ordinary cases. Very severe cases must have stimulants, febrifuges, or tonics, as symptoms require.

Very respectfully,

R. W. TUCK, V.S.

TO VETERINARIANS U. S. ARMY.

FORT RENO, O. T., Feb. 8, 1893.

I regret to have to state that we have failed in our efforts to pass our veterinary bill through Congress this session.

Would respectfully urge that we renew our efforts towards passing a suitable bill next winter, and would suggest that with this object in view you would endeavor to visit Chicago next September, during the session of the U. S. Veterinary Medical Association there, where as many as possible of the Army Veterinarians can meet and discuss the subject and organize an association for our protection and benefit. Those who have promised to be present, so far, are Drs. Turner, 6th; Treacy, 8th; Lemay, 7th; and myself, 5th.

Very respectfully,

GERALD E. GRIFFIN,

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